MILITARY REVIEW

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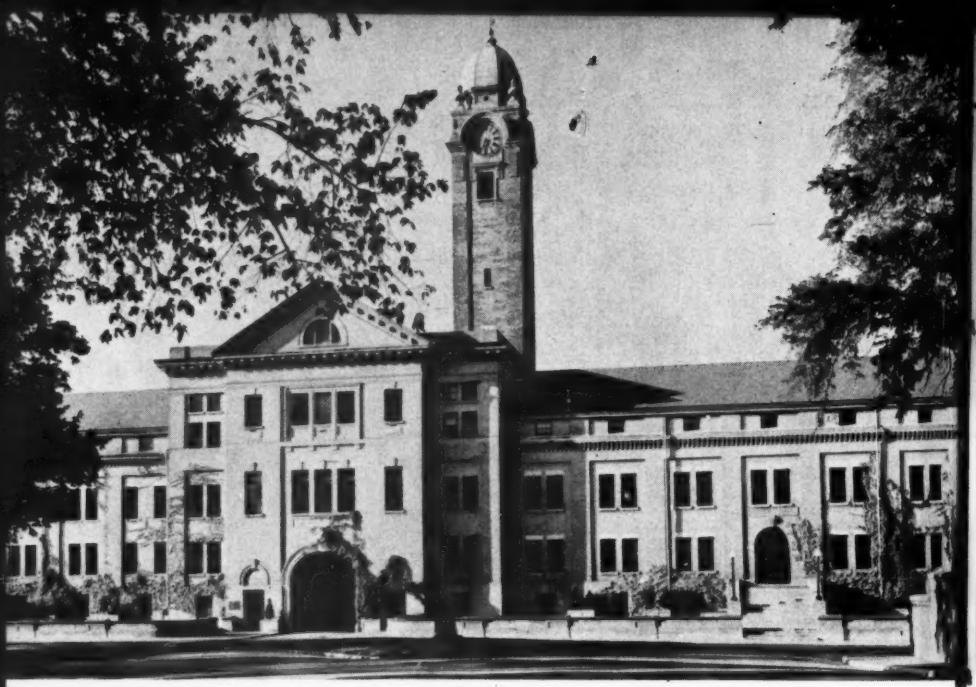
COMMAND AND GENERAL STAFF COLLEGE
FORT LEAVENWORTH, KANSAS

DECEMBER 1955 VOLUME XXXV NUMBER 9



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The printing of this publication has been approved by the Director of the Bureau of the Budget 2 July 1953.

MILITARY REVIEW—Published monthly by the Command and General Staff College at Fort Leavenworth, Kansas, in the English, Spanish, and Portuguese languages. Entered as second-class matter August 31, 1934, at the Post Office at Fort Leavenworth, Kansas, under the Act of March 3, 1879. Subscription rates: $3.50 (United States currency) a year in the United States and other countries of the Western Hemisphere: $4.50 a year in all other countries. Individual reprints, except for copyrighted material, are authorized, provided credit is given the MILITARY REVIEW, Command and General Staff College, Fort Leavenworth, Kansas.

BEATING THE GUERRILLA

Lieutenant Colonel John E. Beebe, Jr., *Infantry*
Faculty, Command and General Staff College

This article is in consonance with current instruction at the Command and General Staff College.—The Editor.

THE spectacular successes scored by Communist guerrillas in the Soviet Union, Albania, and Yugoslavia in World War II, and in China and Indochina subsequently have fostered the myths that somehow the Communists enjoy a monopoly on this type of warfare and that Communist guerrilla forces are almost impossible to defeat. The truth is that the Communists merely recognized the value of this relatively cheap method of warfare and that conditions in some areas favored its adoption. The Communists themselves, governing by oppressive tyranny, are vulnerable to guerrilla warfare, particularly in all of the satellite nations.

Basis for Guerrilla Warfare

That Communist guerrillas can be defeated has been demonstrated in Greece, Korea, the Philippines, Burma, and Iran; Communist guerrillas in Malaya are slowly being defeated. Moreover, during World War II successful non-Communist guerrilla forces operated in France, Italy, Yugoslavia, Greece, China, Burma, and the Philippines. Lawrence led the Arab revolt during World War I; Mosby and Forrest successfully carried out guerrilla warfare in the American Civil War; and Francis Marion fought guerrilla tactics during the American Revolution. The very name guerrilla came from the resistance of Spanish patriots during the Napoleonic campaigns.

A guerrilla force or resistance movement must enjoy the support of at least part of the civilian population in which it operates, and render most of the rest impassive, to survive. There must be good leadership, a strong will to resist, a willingness to endure great hardships, and favorable terrain—such as mountains, jungle, forests, or swamps—in which to establish secure bases.

The other conditions which favor the adoption of guerrilla warfare differ according to the situation in each country. There may be two contending factions, as in China and Korea, or the issue might be national resistance to a ruthless invading aggressor, as in the Soviet Union. Opposition to the re-establishment of colonialism could be used as the rallying point, as in Indonesia and Indochina. The guerrillas or partisans might be used as auxiliary forces to the main armies, as in the Soviet Union. The guerrillas operating in support of all Communist parties are the militant arm of the political party which will seek to rule the state. In some areas guerrilla operations can be assisted by geographical propinquity to the friendly bases of the sponsoring power, as was the case of the Greek, Indochinese, and Chinese Communists. In other areas the guerrilla must fight without ready access to supply from a sponsoring power and not in conjunction with any regular forces, as in Malaya and the Philippines.

Communist guerrillas can be beaten if prompt, aggressive action is taken and relentless pressure vigorously applied. The plan must coordinate political, psychological, economic, and military operations

The guerrillas may be aligned with a foreign army on their soil, as the *maquis* were with the Allies in France, or against as the Soviet partisans who opposed the Germans.

Communist Guerrilla Strategy

Communist guerrilla strategy is simple. For a small investment in political and military leadership, and limited quantities of small-arms ammunition, a weak government is compelled to commit sizable security forces to a costly campaign. Communist political influence is expanded as elements of the population are alienated from the government. The population is terrorized into passive inaction. Various pretenses are used to cloak the real motives—revolt against colonialism, opposition to a corrupt regime, and resistance of oppression have been tried. Captured World War II weapons are furnished and satellite states act as sponsors while the Soviet Union poses as a neutral.

After sufficient area and population are seized, the guerrilla army is reorganized into a regular force, as in China, Yugoslavia, and Indochina. As soon as this force seizes a substantial part of the country, a government controlled by the Communist Party, ordinarily adorned by a few non-Communists in innocuous positions, is established as a "People's Republic" and recognized by the Communist bloc and its dupes. Alliances are then announced by the Communist bloc and agitation to remove the old government is commenced. After the new regime consolidates its position, it purges itself and drops the pretenses it used to gain power.

Early Guerrilla Efforts

The Republic of Korea was particularly vulnerable to subversive and guerrilla attack. Expecting immediate independence and unity as a nation after the defeat of Japan, the Koreans were appalled to find their nation divided along an unnatural boundary at the 38th Parallel, and occupied by the two major powers emerging victorious from World War II. It soon became apparent that the Soviets were unwilling to unify Korea unless on Communist terms. The Soviets at once began the creation of a North Korean puppet state and a modern North Korean Army. They also fostered Communist political agitation in South Korea.

Unprepared for these events, the United States Government was slow in evolving a Korean policy. Various factions were jockeying for position when the Communists made their first attempt to gain political dominance in South Korea. A Communist uprising or riot was staged in Taegu and vicinity on 1 October 1946. The number of rioters was estimated to be nearly 70,000. This Communist-instigated riot, ostensibly based on objections to certain occupation policies, was abortive and failed.

It was apparent by 1948 that no agreement with the Soviets on Korea was possible, so the United States ended her occupation and turned over South Korea to the newly formed Republic of Korea on 15 August 1948, under the leadership of Dr. Syngman Rhee. President Rhee headed a young, politically immature Government which lacked experienced administrators and rested on a shaky economic base. The Government had a small, newly organized,

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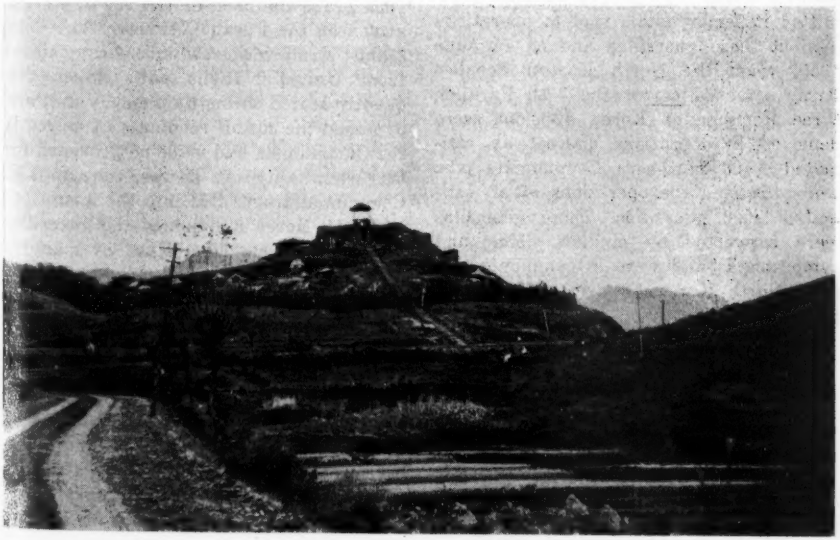
Specialized and refresher tactical training are essential to satisfactory results in antiguerrilla operations. Above, members of a South Korean officer refresher training class attending an open-air session. Below, a Korean National Police outpost in an area frequently raided by guerrillas. The woven bamboo fences were ineffective.



inexperienced constabulary force to defend it.

On 20 October 1948 a Communist cell estimated variously as from 40 to 300 in strength mutinied in the Korean 14th Constabulary Regiment while the unit was in Yosu preparing to move to Cheju Island to suppress insurgents there. The mutineers killed many of their officers and noncommissioned officers, seized an arms depot, and, joined by Communist civilians, commandeered a train and moved to Sunchon, a city of 50,000. After seizing Sunchon, the Communists fanned out in southwest Korea. By 27 October Yosu was recaptured and the Communists had fled into the Paegun Mountain area near Sunchon. Another uprising at Taegu during the period 2 to 4 November 1948 was suppressed easily. The North Korean flag was flown and it was evident that the Communist regime in North Korea had sponsored these attempts to seize power.

The Communist guerrilla organization in South Korea was now established in the rugged mountains of southwestern and eastern Korea. The infant Republic committed its embryonic Army to operations against these guerrillas and on 25 June 1950, when the North Korean People's Army attacked across the 38th Parallel, three Republic of Korea divisions were deployed in operations against an estimated 1,700 hard-core Communists who were directing the operations of an estimated 5,000 guerrillas. These guerrillas were supported by civilian Communist sympathizers and were in communication with North Korea by overland and sea routes.

Guerrillas Aid Main Army

The Republic of Korea Army suffered from this diversion in two ways: its units were not properly trained owing to the operations against guerrillas, and the Army was not strategically or tactically deployed to meet the North Korean onslaught.

The North Korean People's Army enjoyed such easy, early success that there was no apparent need for guerrilla assistance to the main forces, and the guerrillas were relatively inactive. However, after the United States Eighth Army stabilized a defense on the Naktong River line, the guerrillas became more active. Communist sympathizers, believing a victory was imminent, came out in the open.

The guerrilla threat required the Eighth Army on 19 July 1950 to designate an officer to coordinate the defense of the rear areas. He coordinated the efforts of Korean police and United States Military Police to protect railroads, highways, bridges, and signal communications against sabotage and guerrilla activity. It was also necessary to divert tactical units to secure rear areas. National Police battalions and Republic of Korea Army security battalions were formed to combat guerrillas in rear areas and to guard fixed installations.

Growth of Guerrilla Forces

The Inchon landing on 15 September 1950 broke the back of the North Korean attack on the Pusan Perimeter. The Communist Army withdrew under heavy attack from United Nations units which frequently knifed through an enemy unit and bypassed the cut-off remnants. Apparently the Communists had made no provision for this eventuality. As it was, thousands of Communist troops fled into the mountains of South Korea and joined the guerrillas there. They were also joined by many of the Communists who had come out in the open during the North Korean occupation of the area. The guerrillas were in control of large areas during the fall of 1950, and rear area travel was unsafe. Many villages were terrorized. A minimum of 40,000 guerrillas were estimated to be in the South Korean mountains in November 1950. That there may well have been more is indicated by the National Police claim that during the period from 25 June

1950 to 31 August 1951 they killed more than 65,000, captured nearly 25,000, and an additional 44,000 enemy surrendered, for a total in excess of 135,000. This figure probably includes bypassed enemy troops rounded up in North Korea during late 1950, and may not be entirely accurate.

By mid-November 1950 a substantial part of the Republic of Korea troop strength was engaged on security missions. The newly organized Republic of Korea 11th Division drove through the guerrilla base area in southwest Korea to open the main highway routes, but many thousands of guerrillas remained active in the area.

The tempo of guerrilla activity increased during the autumn but the pattern indicated no coordinated effort. Most of the raids were for food and clothing. Survival was the objective; tactical operations declined.

Operations

The Chinese Communist intervention brought new patterns to guerrilla operations. The guerrilla organization was strengthened, new leaders were infiltrated to take charge and carry out new orders, and specific missions were assigned each unit. As the Communist armies pushed southward, the guerrilla activity increased. In January 1951 nearly half of the raids were on United Nations troops. United States Army and Marine troops, together with three Republic of Korea divisions, conducted almost continuous operations during this period to keep the guerrilla activity in hand.

The United Nations counteroffensive which began 25 January 1951 was accompanied by a new stability and increased antiguerrilla activity; many guerrillas were killed or captured and many others were forced underground. Thus firm and continuous pressure on the guerrillas before they had time to complete effective reorganization curbed guerrilla strength as the United Nations counteroffensive rolled the Communists back along the battleline. The severe winter, disease without adequate medical care, desertions, and lack of resupply contributed to a reduction in guerrilla strength. By 31 March 1951 guerrilla strength was estimated to have fallen to 15,000—a reduction from the 37,500 estimated in January. Later operations indicate this figure was a substantial underestimate, or the guerrillas were able to recruit considerable numbers to replenish their losses.

Organization

The guerrillas in South Korea were composed of the following elements:

1. Specially trained guerrillas, both as individuals and units.
2. Locally recruited Communists from provincial, county, and township organizations.
3. North Korean People's Army remnants.
4. Communist sympathizers and opportunists who were obliged to flee when the South Koreans recovered their areas.
5. Criminal elements.
6. Kidnapped citizens and prisoners intimidated by threats and force who frequently deserted at the earliest opportunity.
7. Non-Communists motivated by a desire to avenge some harsh or unjust Government action or to escape the misery and poverty of their existence.

The guerrilla organizations were under firm Communist military and political control. In the North Korean Armed Forces Defense Ministry, which is responsible for all military activities of the People's Republic, an agency known as the 526th Unit and also as the Guerrilla Guidance Bureau exercised control over guerrilla units in South Korea. The Communist Korean Labor Party also had a Guerrilla Department; this department controlled the Labor Party in South Korea, which exercised political control over guerrilla activities within the Republic of Korea area. In the Communist hierarchy,

the political chief is dominant, so the structure was based upon a political party supported by a military arm. Guerrilla units operated within their assigned areas under control of the 526th Unit which operated directly under General Headquarters, North Korean People's Army.

The original plan of the North Korean Government, as outlined in a 1949 publication, provided for military coordination between local guerrilla forces and Communist armies driving down from the north to facilitate the conquest of the country. The 526th Unit dispatched hundreds of infiltrator guerrillas singly or in small groups to South Korea where they were to infiltrate various United Nations and Republic of Korea organizations and engage in underground activities. Most of these were former South Koreans who were Communists; they were specially trained and returned to work near their homes.

Secret police agents were attached to conduct investigations and to check on the political reliability of guerrilla leaders and individual members. Agents were trained and politically indoctrinated at training schools in North Korea. Military subjects such as the care and use of weapons, map reading, camouflage, and guard duty were taught.

No firm table of organization existed. Units varied greatly in size—from half a dozen up to several hundred members. Units frequently reorganized and changed their names. The units were identified by local area designation, by numerical designation, by the name of the leader, or by a name with propaganda or Party significance.

After the front stabilized in the spring of 1951, communications and supply problems became increasingly difficult and control was exercised regionally in the major mountain hideouts in southwest Korea. Guerrilla headquarters for all of South Korea was set up in the Chiri Mountain area under the leadership of Lee Hyung Sang. Ironically, Lee was removed by the Party following the purge of his sponsor in North Korea as a repercussion of Beria's downfall in the Soviet Union. Lee was killed by a member of a special antiguerrilla unit of the Republic of Korea Army shortly thereafter during a patrol action on 17 September 1953.

A word should be said about the infiltration of guerrillas, agents, and enemy soldiers among the hordes of refugees during the war of movement in 1950 and 1951. Screening 5 million refugees was an almost impossible task; and, therefore, many guerrillas were thus able to move through the United Nations lines and join guerrilla units in the mountains. The Communists also sought to exploit the opportunities to recruit members from among these homeless and destitute wanderers. Their number was beyond the ability of the shattered Republic of Korea Government to resettle at once.

Guerrilla Missions

The missions of the guerrilla forces can be described broadly as political and military. Their political missions included the support and strengthening of the South Korean Labor Party cells; the dissemination of Communist propaganda; the creation of dissatisfaction among the Republic of Korea citizens toward the Republic of Korea Government; the fostering of resentment toward the presence of United Nations troops in South Korea; the disruption of Government control over the people; the ruin of economic life in the area; the infiltration of the Republic of Korea Government, especially the National Police and Armed Forces; espionage; and finally bringing about the downfall of the Republic of Korea Government and the control of the entire nation by the Communists.

The principal military missions of the guerrilla forces were to drain United Nations manpower from the front; destroy

arms, equipment, and supplies; furnish precise military intelligence of the dispositions, strength, movements, weaknesses, plans, and activities of the United Nations and Republic of Korea forces; impede the Republic of Korea war effort; cut the lines of communication by sabotaging the railroads, ambushing motor transport, cutting telephone and telegraph wires, and attacking very high frequency and repeater stations; disrupt utilities; interdict roads and trails with small-arms fire; lay antitank mines; attack isolated United Nations installations; raid supply and other installations; destroy bridges; crater and block roads; make surprise attacks on command posts, artillery positions, and Korean Military Advisory Group personnel; terrorize the local population to intimidate them and prevent their supporting the Government; assassinate local officials and political leaders; and raid police stations and isolated army units or villages for food, clothing, weapons, ammunition, and other necessities. The local inhabitants of guerrilla-infested areas were given the choice of leaving their homes and means of livelihood and fleeing from the guerrillas or cooperating with the guerrillas and remaining in an atmosphere of ruthless terror and constant jeopardy. More than 5 million South Koreans lived under these conditions during the period from 1948 to 1954.

On 9 February 1951 the Soviet news agency, *TASS*, broadcast in Russian over the Moscow Radio an order of the day signed by Kim Il Sung, Commander in Chief of the North Korean People's Army, defining the duties of partisans (guerrillas) as follows:

Partisans and women partisans must render any desired kind of support to the advancing People's Army and to the units of the Chinese Volunteers, exterminate the headquarters of the enemy, and disorganize still more the rear of the enemy.

Owing to the energetic action of the United Nations Command during the fall and winter of 1950-51, the guerrillas never realized their potential and, although they continued to constitute a serious threat to internal security and the stability of the Republic of Korea, they were actually only a minor harassing threat to the military operations of the United Nations Command. Prompt aggressive action had prevented the formation of strong and effective guerrilla forces.

Principles

A thorough understanding of the principles of guerrilla warfare is essential if we are to combat the guerrilla successfully. The North Koreans, like other Communists, follow Mao Tse-tung's writings which can be stated briefly as follows:

1. Guerrillas recognize the superior strength and better supply system of the enemy. The guerrillas must, therefore, try to prolong the war, avoid major engagements, seek local numerical superiority, and select objectives for attacks within their capabilities to ensure victory and obtain weapons.

2. Guerrilla campaigns must be adjusted to suit political requirements.

3. Guerrillas must wage a war of extermination, seize arms, expand their forces, and destroy the enemy.

4. Guerrilla warfare must be a war of movement. Positional warfare must be avoided, although it is possible to establish and defend permanent bases.

5. Guerrillas must retain the initiative in both the attack and the retreat, and maintain great flexibility in massing, dispersing, and shifting their forces.

6. Guerrillas must conduct a defensive war but maintain the initiative by conducting a series of coordinated tactical operations, including limited objective attacks.

7. Local superiority should be sought

by concentrating small units into a major unit when desirable.

8. A favorable attitude toward the guerrillas on the part of the civilian population is essential and close coordination with Party workers in the area, especially in regard to propaganda, agitation, and help to needy local people, is necessary.

9. Finally, guerrilla strength must be increased so that permanent bases can be established. These bases are the first steps toward establishing a rear area and demonstrate a relative readjustment of combat power since bases can only be established when the guerrillas are strong enough to deny the area to the enemy.

Training and Tactics

In Korea, guerrilla training varied from specially trained soldiers and political officers, who were well qualified to lead their forces, to boys who had little or no training. Training literature consisted of North Korean combat doctrine for guerrillas and translations of Chinese Communist doctrine. Mao Tse-tung's guerrilla doctrine was the basis of training. Open combat with superior forces was to be avoided. Quick action by small units was emphasized, to be followed by rapid withdrawal, dispersal, and subsequent reassembly and redeployment as a unit.

Tactical operations included ambushes, raids on army and police outposts and small settlements, harassing actions against Government forces and selected townspeople, hit-and-run terror raids, agitation and propaganda, and infiltration into Government forces.

The bulk of guerrilla incidents were raids and ambushes. Ambushes of vehicles were usually laid in a mountain pass where the road passes through a steep defile on an uphill grade and where the ambush party could take cover protected by steep banks, boulders, and forest. A road bend was a favorite place.

Small-size friendly patrols were frequently ambushed from hiding at close range with devastating effect. Patrols in column are particularly vulnerable on their flanks when cover is dense.

Most raids were against towns and villages or isolated military or police installations. Raids against towns and villages usually were to loot for food, clothing, and money, and to terrorize the local population. They usually occurred at night. Police boxes along the roads were frequent targets. Towns as large as 10,000 and 20,000 population were being raided as late as the fall of 1953.

Raiding groups usually operated in groups of about 50 men, but sometimes in strengths up to 300 men. The parties were broken into two echelons. The first echelon secured the approaches and exits from the raided area, and covered the withdrawal. The second echelon, the main body, followed shortly thereafter, closed on the objective, and accomplished the mission. Withdrawal frequently would be by a different route—cross country into the mountains or across a major river. Police boxes erected on the approaches are of little value, for they can be avoided or surprised and eliminated. Similarly, bamboo and sapling woven fences around villages, costly in time, effort, money, and materials to erect, proved ineffective as antiguerrilla barriers.

Sabotage was employed to a surprisingly small degree. Apparently, a lack of mines and explosives saved the numerous and vulnerable bridges which were seldom mined or blown. Public utilities were seldom damaged, nor was there much damage to military equipment. Telephone and telegraph wires were frequently cut and trains were sometimes derailed, but the effect upon operations was negligible. The most important sabotage was arson, often in connection with terrorizing the civilian population, and sometimes—as in the cases of the great fires which swept Pusan in

1953—with huge military supply bases as the targets.

Harassment was used as a weapon of militant and propaganda operations. It was intended to lower the morale of opposing forces and intimidate the civilian population. This usually took the form of "visits" to the households of persons cooperating with the Government—threats, looting, kidnapping or murder, arson, and circulation of propaganda were the tools employed.

Propaganda disseminated by the guerrillas emphasized dissatisfaction with the Rhee regime, alleged that corruption of Government officials had contributed to ruining the impoverished people, assailed high taxes, decried police terror, and fomented anti-American sentiment.

The Communists asserted that they would ultimately win, warned the people not to support the Government, and promised a better livelihood for the people and the correction of various local grievances. Much of this propaganda was effective. The people were afraid to denounce the Communists among them or to give information until 1954, when it was apparent that the guerrillas were no longer able to take reprisals against them.

Although no longer a serious threat to military operations or supply installations, the Republic of Korea recognized that even during the course of the war it would be necessary to attempt to destroy the guerrillas who were terrorizing an area inhabited by more than 5 million people. Accordingly, a series of operations was commenced which ended on 30 June 1954 with the guerrilla menace eliminated as a material threat to peace, internal security, or stability. Less than 200 remained at large in scattered leaderless small groups at the close of the last operation. The morale and organization was broken. The remnants were surrendering and the civilian population was supporting the Government. It was then considered time to return the problem to the civil authorities as one of law and order.

Offensive Operations

The first of the special operations, Operation *Ratkiller*—employing a force of two Republic of Korea divisions, together with the equivalent of another division in security battalions and police—bagged the largest number of guerrillas. More than 11,000 guerrillas were killed, and more than 10,000 captured, including 50 major leaders. Approximately 4,300 of the prisoners were released after screening. This operation was conducted during the period 1 December 1951 to 16 March 1952 in the mountainous area of southwestern Korea.

Ratkiller was followed by Operation *Ferret*, from 17 March to 12 July 1952. Only security forces in approximately division strength operating under the Sonam (Southwest) Command—later redesignated the Southern Security Command—were employed. Several hundred guerrillas were killed and captured.

Operation *Mongoose*, conducted with a force of approximately two divisions, operated for only a little more than a month in the same area—southwestern Korea. Nearly 500 guerrillas were killed or captured.

Operation *Bloodhound*, conducted with approximately division strength in security forces under the Southern Security Command, continued from August 1952 to the end of November 1953. During this period the guerrilla strength had been whittled down to about 1,000 in South Korea.

The final operation, *Trample*, was conducted in approximately 2-division strength from 1 December 1953 to 30 June 1954. This operation succeeded in killing or capturing all the remaining leaders of significant guerrilla bands and breaking up the units. Many were entirely destroyed. The guerrillas knew the end had come,

and many were induced to surrender. Propaganda was directed at the civilians as well as the guerrillas, and with good effect. The population began to cooperate with the Government and to furnish information concerning the guerrillas. The reign of terror had ended. Hundreds of villages were reoccupied, land was placed back in cultivation, economic assistance was given to the relocated families, and life resumed its normal course.

Antiguerrilla Objectives

The destruction of the Communist guerrillas in Korea again proves that successful operations can be conducted against guerrilla forces. Military operations alone are not sufficient, for there are actually two objectives: the destruction of the guerrilla force, and the elimination of Communist influence on the civilian population. An over-all plan at the Government level, embracing political, psychological, economic, administrative, and military action, designed to prevent the formation of a guerrilla force, or to weaken it if it is already formed, must be adopted.

Purely defensive measures will permit a guerrilla force to grow and become strong. The initiative must be taken from the guerrillas. Limited offensive operations are better than none. Continuous, unrelenting pressure on the guerrilla must be maintained. Defensive measures are employed, of course, to protect supply and communications installations.

The major political and psychological mission is to win the active and willing support of the people and to deprive the enemy of that support. Skillful propaganda aimed at the people and the guerrilla can do much to help discourage support of the guerrillas, discourage others from joining, and induce others to surrender. A thorough knowledge of the needs, customs, and beliefs of the people is essential. The old principle of reward and punishment is still applicable. The people should be given real incentives to oppose the guerrillas in the form of economic and other benefits such as rewards for information. Punishment must be meted out to those who support the guerrillas. Propaganda and persuasion geared to local issues and in readily understandable form should be employed. The attitude of the Government officials, police, and Army toward the people must be exemplary at all times. Harsh, unjust, arbitrary action or the mass punishment of innocent people for the misdeeds of a few will drive the people into the guerrilla ranks.

The Military Campaign

The military campaign should be in harmony with the political, psychological, and economic policies. Not only must the guerrillas be isolated from the civilian population, but they must be broken into small units isolated from each other. If the guerrillas are based in an area adjacent to or near a friendly or sponsoring power, then that base must be seized and the guerrillas cut off from contact, supplies, and support of the sponsoring power. This should drastically affect their supplies of arms, ammunition, and explosives, and should impair their communications and lower their morale. Finally, the campaign should attempt to cut off their food supply. These are the vulnerabilities of the guerrillas. The campaign plans should exploit them fully.

Intelligence

Military operational plans must also be based on complete and detailed intelligence. To this end a comprehensive intelligence net should be established with emphasis on transmitting information of guerrilla activity by the most rapid means available. All intelligence collection agencies must funnel their information in to the G2 of the antiguerrilla force commander without delay. It is especially important that police and other civil agencies understand and comply with this requirement.

Also, agents must be developed among the civilians who normally pass through or live near guerrilla base areas. The judicious expenditure of funds to purchase information can save many weary, fruitless reconnaissance missions, although properly planned reconnaissance is also essential.

The intelligence collection effort should be complete. A detailed study of the weather, terrain, the local conditions, history of the guerrilla movement, reasons for the guerrilla movement, factors favoring the guerrillas, and guerrilla vulnerabilities and weaknesses must be made. Complete order of battle information on each unit to include each member of each unit is desired. Personality files should include all local connections; frequently a mother can persuade her son to surrender, or a guerrilla leader can be captured while visiting his wife or girl friend. Special efforts must be made to kill or capture guerrilla leaders and seize their communications equipment. Aerial reconnaissance is often helpful in locating hidden camps, and ground reconnaissance by trained units should also be employed.

Combat Operations

Counterintelligence plays an important role in antiguerrilla operations. The enemy ordinarily has excellent intelligence. It is essential, therefore, to preserve the secrecy of operational plans so that the guerrillas do not escape before the trap is sprung. It should be remembered that guerrillas also attempt to infiltrate antiguerrilla organizations. The Counter Intelligence Corps (CIC) must check all indigenous personnel carefully, especially any who are taken into confidence. Finally, the CIC may be able to assist in infiltrating our own agents into the enemy area, in preparing cover and deception plans, and in the collection of intelligence.

Combat operations against guerrillas follow this sequence: The antiguerrilla force commander establishes his headquarters near the guerrilla area, moves his troops in, establishes bases of operations, takes appropriate security measures, obtains essential intelligence, prepares operation plans, and launches combat operations against the guerrilla forces. Continuous pressure is maintained to seek out, gain contact with, and destroy the enemy. The guerrillas must be given no opportunity to rest, reorganize, rehabilitate, recruit or prepare for future operations. The operation is over when there are no guerrillas remaining—not when the guerrillas have been disorganized and dispersed.

Antiguerrilla Tactics

Guerrillas normally avoid contact with superior forces. They rely heavily upon their intelligence and security warning agencies in order to avoid surprise. Nevertheless, surprise should be sought in the offensive to get an opportunity to destroy them. Deception, speed of maneuver, ruses, ingenuity, and aggressive leadership offer the best possibilities of attaining surprise. Excellent mobility—on the ground as well as by vehicles—is essential to overcome the guerrillas' superior knowledge of the terrain and their intelligence system.

Encirclement is the most favored maneuver in antiguerrilla operations, but it requires very large numbers of troops if the objective is large or in rough terrain, as it normally is. There is a strong possibility that the enemy may escape through gaps in the ring of encircling troops. All troops should arrive at the line of departure simultaneously, preferably just before dawn, deployed on a skirmish line in continuous close contact. Reserves are placed in depth blocking the most likely escape routes to apprehend any guerrillas who escape. The ring is tightened as the units close on the center. The enemy must be flushed out into the open. In areas of heavy cover, skillfully camouflaged and hidden guerrilla caves and bunkers are almost impossible to detect. The recon-

naissance must be thorough and painstaking if results are to be obtained.

Another maneuver is a drive across a suspected guerrilla hideout area. This may be accomplished with fewer troops than encirclement. Again secrecy and speed of execution are essential. The guerrillas should be driven toward a blocking force which will destroy the guerrillas as they seek to escape. Additional blocking forces should cover other escape routes.

Once contact is gained, the basic fundamentals of fire and maneuver, aggressive and rapid closing on the enemy's flanks, and vigorous pursuit are followed as in any other tactical engagement. The objective must be the killing or capture of the entire guerrilla force. Guerrillas will attempt to hold off pursuit by a rear guard delaying action while the main body escapes. The rear guard would then disperse and hide or attempt to outdistance the pursuers.

Organization and Leadership

Special antiguerrilla forces—composed of experienced woodsmen, hunters, rangers, foresters, or other men at home in the guerrilla's habitat—organized, equipped, and trained to beat the guerrilla at his own game will permit minimum forces to engage the guerrilla and often achieve greater success than conventional forces many times their size. They specialize in surprise, deception, and night movement and fighting. Such forces gain in effectiveness as they gain familiarity with the enemy and the terrain, and should not be removed from an area until the guerrillas have been destroyed.

In Korea there was little occasion to employ armor, artillery, or tactical air support against guerrillas. Air reconnaissance is of value, and was not used enough. Air observers can be helpful in directing troops toward escaping guerrillas during an attack. Engagements are usually fought with small arms. Light infantry mortars are capable of delivering all the heavy weapons support needed. Light recoilless rifles are of some value. The mobility of the attacking troops must be given priority over heavy fire support. In most guerrilla warfare this means foot mobility.

Leadership, tactical ingenuity, perseverance in the face of repeated frustration, professional skill, physical endurance, and the maintenance of morale under conditions of great hardship are severely tested in conducting operations against guerrillas.

Communist guerrilla warfare can succeed if the danger is not recognized, if the character of the action is underestimated, and if only conventional military action is employed. At the lower tactical levels, the unskilled, complacent, and superficial commander is rewarded by ambush, sabotage, defeat, and failure. At the national level, the result can be catastrophe and national defeat—as the Germans in the Soviet Union, the French in Indochina, and Chinese Nationalists on the mainland learned.

The Communist guerrillas can be beaten if, at the Government level:

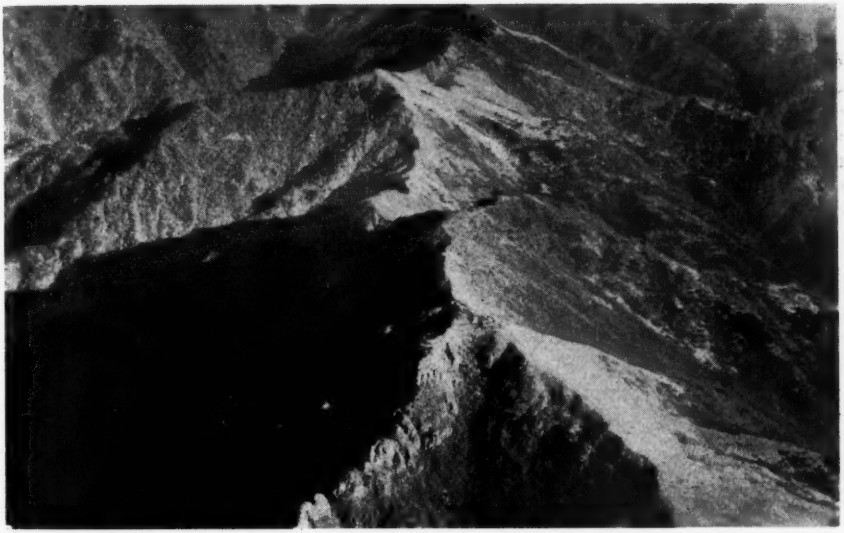
1. The nature, objectives, tactics, and vulnerabilities of the enemy are recognized.

2. A broad policy, combining military action conducted by adequate specially trained forces under dynamic leadership employing political, economic, and psychological measures designed to gain the support of the civilian population, and isolate and destroy the guerrillas, is adopted.

This has been demonstrated in Greece, Korea, the Philippines, Iran, and Burma.

Guerrilla Balance Sheet

What did the guerrillas accomplish in Korea? They diverted combat units and manpower from the front. They supplied intelligence to North Korea until their communications failed. They terrorized



Sharp ridges characterize the rugged Korean Mountains. Above, Chiri Mountain, which was the principal guerrilla stronghold for all South Korea, has a perimeter of 125 miles at its base. Below, South Korean Army troops attired in the quilted winter uniform assemble after completing an antiguerrilla operation in a mountain area.

large areas and kept millions of people in turmoil. They prevented effective Government control over large areas for several years. They prevented the cultivation of some land. They engaged in minor harassing actions against the lines of communication. However, after the front was stabilized early in 1951, they failed to constitute a real threat to the rear area or to combat operations.

What were their vulnerabilities? They suffered decreasing civilian support due to their cruel and terrorist tactics. They had no secure bases. They had no reliable, effective contact with North Korea for supply and communications. They lacked supplies, good arms, ammunition, medical service, adequate communications, sufficient training, and finally, they lacked a belief in ultimate victory.

Lessons Learned

Many mistakes were made in conducting antiguerrilla operations in Korea. At first the political, psychological, economic, and military policies were not adequately coordinated; that situation improved substantially by 1953 and 1954. Sometimes there was a lack of unity of command. This promoted rivalry and jealousy between the police and the Army; at times the two forces were operating in the same area and because of lack of coordination they engaged each other. The situation was corrected late in 1953 by subordinating the police to the Army for antiguerrilla operations. The troops used in antiguerrilla operations frequently were not adequately trained for this mission. Other units were kept continuously engaged on antiguerrilla missions until they became stale and ineffective and they needed retraining desperately. Small unit leadership was often poor and lacking in aggressiveness, as was evidenced by the fact that repeated contacts with guerrillas were made without results.

Political, psychological, and economic measures were not well coordinated until late in the campaign. The national economy suffered from inflation, the inevitable result of the war. Propaganda was not directed at the civilian population intelligently and, therefore, often lacked appeal. The offering of substantial monetary rewards for information leading to the apprehension of guerrillas would have been an effective incentive, and would have been much less expensive than the operational methods used—moreover, rewards would have actively aligned the people on the side of the Government. The police—who were too numerous and too poorly paid and trained—were ineffective and too oppressive in their dealings with the people. This helped swell guerrilla ranks by creating resentment toward the Government and a desire for vengeance.

Another serious omission was the failure to organize, equip, train, and charge local governmental units with responsibility for local self-defense. There were so-called volunteer police, but they were ineffective. The local citizens should have been given responsibility to organize recognized vigilantes to cooperate with Army units operating in the area.

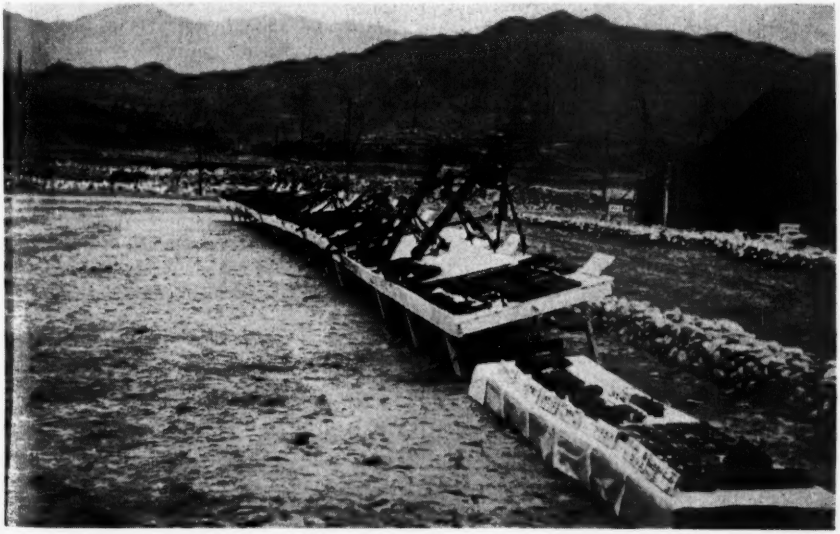
There were too few specially trained antiguerrilla forces. More should have been trained to fight the guerrilla on his own terms.

Intelligence was not as effectively coordinated as it should have been. The police often failed to report information of guerrilla incidents in time for competent Army units to take counteraction.

Many of these defects were remedied or improved during the conduct of operations—others were not. To the extent that they were not, the over-all antiguerrilla campaign was impaired.

That the campaign was successfully concluded is a tribute to the untiring efforts and perseverance of thousands of Republic of Korea Army officers and men, and to many conscientious National Police

Superior mobility and communications and the movement of reserves are required for successful antiguerrilla operations. Above, South Korean Army troops detruck as the ring is tightened on the Lee Yung Hae guerrilla unit following the Uiryong raid. Below, part of the weapons seized in Operation *Trample*.—Department of Defense photos.



officers. Many local citizens and officials who braved Communist threats to continue to do their duty and support their country also deserve credit.

Conclusions

Communist guerrillas can be beaten if prompt, aggressive action is taken. The plan must coordinate political, psychological, economic, and military operations. The initiative must be seized; relentless pressure must be applied.

The guerrillas must be deprived of civilian support, and the active cooperation of the civilian population must be gained. The guerrillas must be cut off from the support of their sponsoring power and their sources of supply.

Specially trained antiguerrilla forces utilizing qualified local men employing guerrilla tactics are much more economical in cost, numbers, and results than large forces employing conventional methods. Local governmental units must be given the means and charged with the responsibility of combating guerrillas in their areas.

Adequate incentives to support the Government and oppose the guerrillas must be provided. Propaganda should be addressed to the local population and deal with local problems. The people must be reassured that it is in their interest to support the Government.

A comprehensive, effective intelligence net, utilizing all collection agencies and sources available, operating under centralized direction, is essential in antiguerrilla operations.

Tactics should emphasize encirclement, wherever possible, surprise, deception, speed of execution, thorough reconnaissance, mutual support of patrols, aggressive closing with the guerrillas on gaining contact, fire and maneuver, maintenance of contact and vigorous pursuit until the enemy is destroyed, and relentless pressure to flush out the guerrillas and keep them on the move so that superior forces, coordinated by excellent communications and taking advantage of superior mobility, can close with and destroy the guerrillas.

Operations against guerrillas should be continued without interruption until the guerrilla force is completely destroyed.

Current United States Army doctrine on antiguerrilla warfare as enunciated in Field Manual 100-5, *Field Service Regulations—Operations*, Field Manual 31-15, *Special Operations—Operations Against Airborne Attack, Guerrilla Action and Infiltration*, and Field Manual 31-20, *Special Operations—Operations Against Guerrilla Forces* is sound and adequate.

Recommendations

It would appear desirable to give more instruction in antiguerrilla operations in service schools, and more training in this subject to units.

Antiguerrilla plans should be prepared by every command faced with the possibility of a guerrilla threat. Recommendations for the adoption of political, psychological, and economic policies designed to prevent the rise of a guerrilla force or to minimize its effect should be pressed vigorously on the government concerned.

AUTHORS

Authors submitting materials to the MILITARY REVIEW are requested to forward manuscripts through the Security Review Branch, Office of Public Information, Office Secretary of Defense, The Pentagon, Washington 25, D. C.

WESTERN EUROPE'S POLITICO-MILITARY DEVELOPMENT

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The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

THE period immediately following World War II makes me think of the old English poem:

There was a young lady from Riga,
Who went for a ride on a tiger,
They came back from their ride,
With the lady inside,
And a smile on the face of the tiger.

The lighthearted spirit of the Western Powers at that time can be compared with that of the young lady from Riga; and even if Western Europe has often been bitten by the tiger, it has never been closer to being swallowed.

At the end of the war the United Kingdom had 1⅓ million men under arms but not over ½ million were left 1 year later. At the same time the United States forces in Europe had decreased from more than 3 million men to about 400,000. Canada had withdrawn her forces, and the reconstruction of France had hardly started. These reductions were natural after taking into consideration the war fatigue that ruled not only in Western Europe but all over the Western Hemisphere. Also, in order to procure the necessary manpower to solve the enormous problems of reconstruction, a reduction of the Armed Forces was highly desirable.

At the same time, the signing of the United Nations Charter created a universal hope that not only the war but also the peace had been won.

Two Prerequisites

Everyone realizes, however, that the charter of the United Nations rests on two prerequisites: first, that the five big powers, China, France, the United Kingdom, the United States, and the Soviet Union, who are permanently represented on the Security Council, were capable of arriving at lasting agreements on all major issues; and second, that none of these powers, with the exception of the Soviet Union and her well-known claim on Japan, were seeking territorial enlargements.

Only gradually did both the statesmen and the people realize that neither of these prerequisites was present. However, one significant personality in Western Europe, Sir Winston Churchill, envisaged the danger at an early stage and cabled President Truman on 12 May 1945:

The postwar years of Europe are divided into three phases: the first short period of optimism, a longer phase of pessimism, and finally the critical period when Western Europe could negotiate from strength

I am profoundly concerned about the European situation. In a short space of time our armed power on the Continent will have vanished, except for moderate forces to hold down Germany.

Meanwhile what is to happen about Russia? I feel deep anxiety because of their misinterpretation of the Yalta decisions, their attitude toward Poland, their overwhelming influence in the Balkans, excepting Greece, the difficulties they make about Vienna, the combination of Russian power and the territories under their control or occupied, coupled with the Communist technique in so many other countries, and above all their power to maintain very large armies in the field. What will be the position in a year or two when the British and American Armies have melted and the French have not yet been formed on any major scale . . . and when Russia may choose to keep 200-300 divisions on active service?

An Iron Curtain is drawn upon their front. We do not know what is going on behind. . . . A broad band of many hundreds of miles will isolate us from Poland.

Meanwhile, the attention of our peoples will be occupied in inflicting severities upon Germany, which is ruined and prostrate, and it would be open to the Russians in a very short time to advance, if they chose, to the waters of the North Sea and the Atlantic. . . .

The first striking proof of the validity of Churchill's assumptions on the Soviet attitude came when the United Nations Charter was being formulated in San Francisco in 1945. On this occasion, the chair of Poland was empty because East and West had not been able to reach an agreement on the composition of a provisional Polish Government—primarily because of unreasonable Soviet claims. That Poland had to be the one absent was, of course, a bitter pill for the United Kingdom whose entry into World War II was linked with the fate of this country.

However, another 3 years was to elapse until Western Europe clearly realized the new situation—and a still longer time before the Western World re-established sufficient forces in Europe to ensure security. The first short period was of optimism; then another, almost twice as long, of deep pessimism; and finally, the period when Western Europe could negotiate from strength. These periods divide the postwar years of Europe into three phases. I ask, however, to be excused for overstepping the limits of the subject, but I consider this necessary because the fate of Western Europe cannot be separated from that of the entire Western Hemisphere.

Immediately after the war the situation in Western Europe was directly dependent on the agreements that were made during the war. The regulation of European affairs during the war had already created a certain disagreement between Prime Minister Churchill and President Roosevelt. The latter, who undoubtedly must be looked upon as an exponent of American good faith at that time, would not support the United Kingdom in that country's position toward the Soviet Union. Consequently, at the Yalta Conference and other meetings where Europe's fate was decided, the votes in important matters favored the Soviet Union by a 2 to 1 margin. Thus at the end of the war the Soviet Union controlled almost all of the Balkans, Czechoslovakia, Poland, East Germany, and parts of Austria.

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The keen spectator soon accepted the sardonic truth expressed in a sentence by the Danish humorist, Storm P: "We ain't got war no more, but when do we get peace?" For the great masses, however, it took time to realize what was taking place. Because of the good will which the Soviet Union had built in Western Europe as one of the liberators from the German yoke, ideal conditions prevailed for the initiation of the "cold war." In the Soviet occupied portion of Europe, the strings were continuously tightened. Anna Pauker and similar characters appeared on the stage. Leading opponents of the Communist ideology, even within the social democratic parties, were liquidated or escaped. As a result of this state of affairs, the Soviet Union, through satellite governments, took over complete control of seven countries with a total of 87 million inhabitants.

Simultaneously, the more clandestine fight in Western Europe continued with constant paralyzing strikes being fomented in France and Italy. When we Scandinavians are inclined to talk of these countries' lack of stability, we should not forget that at this time the United Kingdom was also exposed to strikes. In our own country (Denmark) we arrived at such an intolerable situation that the United Labor Union was about to lose its control of the workers. On 9 February 1946 in a sharp appeal, Mr. Eiler Jensen, the Chairman of the United Unions, warned the workers against starting strikes that were provoked and controlled from outside the country.

The cold offensive, however, did not confine itself to such relatively peaceful means. In Greece guerrilla forces attacked from Bulgarian, Albanian, and Yugoslavian territory, and only significant assistance from the United Kingdom and the United States enabled the Greeks to successfully defeat this movement. In France sabotage was directed against the railroads, involving the loss of many lives, and in the United Kingdom sabotage was carried out against both naval units and industries important to the armament program.

Although outside Europe, but still of direct importance to the Continent was the Soviet expansion in Iran and the resulting threat against the oil sources which are of such vital importance to Western Europe. Turkey also was involved and had to fight both on the diplomatic side and within the United Nations against still more violent Soviet claims for internationalizing the exits from the Black Sea.

Although far from Europe the serious influence of the fights in Malaya, Indochina, and Indonesia on Western Europe's ability to resist must be borne in mind. For the United Kingdom the Arab-Jewish problem in Palestine involved a binding of military forces as well as economic resources.

With pressure being exerted both from within and without, Western Europe toward the end of the period found itself in a position never experienced before during peacetime. The nations were practically without any protection. They were all more or less infected by Soviet controlled Communist parties whose adherents appeared inside the civil administration, business life, labor unions, press, radio, and any positions from which highly classified information was obtainable and through which the masses could be influenced.

Production, which was low because of the ravages of the war, decreased still further because of strikes. A coordinated effort for the purpose of reconstruction was not possible and this, in connection with the continuous stream of refugees from the East, forced a high percentage of the people of Western Europe to live like animals—an extremely fertile field for communism. At the same time Western

Europe's debt to the United States, Canada, and those countries which because of their neutrality had been able to keep their industries intact was increasing.

Of course, Western Europe possessed both leaders and groups of individuals who envisaged the danger and who had both the will and the ability to lead their people. As a result some progress was achieved. However, the task in itself was so enormous that, in view of the burden caused by the Communist activities, it simply could not be solved by Western Europe alone. Outside assistance was a necessity because conditions in Western Europe were becoming so unfavorable that over-all communism was inevitable within a few years. This danger was clearly realized by two Americans, President Truman and the then Secretary of State George C. Marshall, who undoubtedly in history will receive full credit for their efforts.

In his address to Congress on 12 March 1947 President Truman said: "It must be the policy of the United States to support free peoples who are resisting attempted subjugation by armed minorities or by outside pressure." On the basis of this declaration, which later was to be known as the Truman Doctrine, the United States Congress granted 400 million dollars as aid to Greece and Turkey and civil and military advisors were dispatched to these countries.

The speech made by Secretary of State Marshall at Harvard University on 5 June 1947 outlined the program concerning assistance to Europe for the purpose of making its countries self-sustaining. I wish only to point out that to Western Europe the Marshall Plan meant the turning point of its economic policy. In addition to the direct assistance that the plan entailed, it contributed to the abrogation of import duties and protectionism and cleared the road for closer Western European economic cooperation.

That the Soviet Union realized this could be the consequence was clearly proved by the vigorous counteractions that followed. First, the Soviets themselves refused to accept any assistance, then their satellites were forced to do the same, and finally the Cominform was created for the purpose of opposing what was denounced as a new weapon in the hands of American imperialism. Likewise, the Comiform granted the satellites a measure of partly simulated economic support from the Soviet Union.

From the Marshall Plan, I wish to return to the Truman Doctrine which was epoch-making not only for Western Europe but for conditions all over the Western World. It had great significance in that the United States accepted the leading position imposed upon her by the economic conditions and the balance of power of the world. It thus meant a break from the traditional American policy of isolationism at a time when the United States herself was not threatened by armed aggression. Both the Truman Doctrine and later resolutions have cleared the way for the integration of the entire Western World and for the possibility of standing together united and strong.

This doctrine was immediately followed by action—not only in Greece and Turkey, but with the United States Navy showing the Stars and Stripes everywhere on the borders of East and West. In this country, we all remember Admiral Richard L. Conolly's repeated visits to Copenhagen with heavy naval units—and we remember just as well the efforts of the Soviets at that time to force their claims on the Baltic by capturing Danish fishing vessels in international waters.

About the same time, the statesmen of Western Europe began to make preparations for actively countering the Soviet cold offensive. In March 1947 France and the United Kingdom signed a treaty of cooperation and mutual assistance, which later became the basis of the Western

Union which was signed in 1948 by the Benelux countries, France, and the United Kingdom.

Great Britain again showed her capabilities of leadership when Foreign Minister Bevin commented on the establishment of the Western Union in the House of Commons:

We shall have to consider the question of associating other historic members of Western civilization including the new Italy in this great concept. We are thinking of Western Europe as a unit.

At that time Mr. Bevin also investigated in the United States the possibilities of American guarantees to such a European union.

I stressed a moment ago that the leaders of Western Europe began a constructive counteractivity because the people themselves had not yet fully come to realize the impending danger. The burden of reconstruction was overwhelming, and all countries had a great deal to accomplish if they were to ensure their own safety and economic needs.

In the years prior to World War II, Germany had repeatedly challenged the other European nations. As a consequence of her attack on Poland, a decision was reached to oppose Germany to the bitter end. This was especially true in Great Britain.

Second Period Begins

The Soviet Union made a similar mistake in Czechoslovakia. The fall of Jan Masaryk against the sidewalk in Prague on 10 March 1948 was actually not heard far away. But the reputation of this hero and his fight for freedom was such that his suicide in protest of the Soviets forcibly taking over power in Czechoslovakia was echoed all over Western Europe—and even a great part of the world.

The division between the first and the second periods can be marked by the death of Masaryk or by the first Soviet atomic explosion 1 year later. Personally, I prefer to place it in 1948, because this event touched something fundamental in Western culture, namely the belief in the possibility of the individual in the long run to override oppressive power through the dauntless assertion of the principles of freedom. The events in Czechoslovakia opened the eyes of many people and the interest in mutual assistance treaties increased.

We remember how the negotiations on the establishment of a Scandinavian defense treaty were carried out—and we remember how their failure led Denmark and Norway into the North Atlantic Treaty which was signed in Washington on 4 April 1949. This was a logical consequence of the cooperation within Western Europe and the cooperation of this Continent with the United States and Canada based on the Truman Doctrine.

I shall not give a detailed explanation of the North Atlantic Treaty and of the results which it has had both to Western Europe and to the North American Continent. Rather, I shall outline what appear to be the most essential events in the development of NATO.

It should be stressed that the Atlantic Pact is not, as has often been stated, a purely military alliance which only came into being to oppose the offensive attitude of the Soviet Union toward Western Europe. The treaty came into existence as a natural consequence of a development covering a longer period. Its purpose was to improve equally general living conditions in the Western World through a close political, economic, and cultural cooperation and to further military cooperation.

The military cooperation within NATO was at first of a rather loose nature. The strength of the treaty was based upon the Armed Forces of the individual member nations, and despite the fact that certain regional groups were planning to

create a joint command in time of war, no effective coordination was suggested for time of peace.

Monopoly Ends

During the summer of 1949, however, one event happened which—together with the outbreak of hostilities in Korea 1 year later—caused a radical change in this situation. Many of you probably have asked yourselves during my explanation of the first phase why the Soviet Union did not go the whole hog and conquer Western Europe during this period of weakness. *The answer was undoubtedly the then United States monopoly of atomic weapons.* The experiences from Nagasaki and Hiroshima would certainly make a nation, which did not possess atomic weapons, consider time and again before beginning a new war.

In the summer of 1949, however, an atomic explosion was registered which did not originate from tests carried out in the United States—this was a surprise to the Western World. It became evident that Soviet atomic espionage in the United Kingdom, the United States, and Canada had succeeded in obtaining information that enabled the Soviet Union to design an atom bomb 2 to 3 years earlier than had been anticipated.

When the North Atlantic Council assembled in September 1950, about 3 months after the outbreak of the Korean conflict, it was with a new background. The council quickly agreed upon the necessity for close military cooperation in peacetime and on the buildup of collective balanced military forces. The result was the assignment of a Supreme Allied Commander in Europe (SACEUR). This was followed by the establishment of the Supreme Allied Commander Atlantic (SACLANT), a command organization for the Channel area, and one for North America. This command system divided Europe into three regions—a Northern Region including Denmark and Norway, a Central Region comprising Benelux, France, and the occupation forces in West Germany, and a Southern Region consisting of Italy. The only essential change to the original organization was occasioned by the entrance of Greece and Turkey into NATO. These two countries were included in the Southern Region, and a fourth region, the Mediterranean Command, was created.

The conditions for commanding the available forces as effectively as possible were now established, but it was evident that these forces were not adequate for the task assigned. A temporary Council Committee was set up to examine the possibilities of establishing sufficient forces and to divide the burden equitably among the member nations. The recommendations of this committee materialized in the agreement on NATO's force goals in Lisbon in February 1952.

This was the starting signal for the constitutional authorities of the NATO nations and in the following years they granted funds for defense far beyond prior expenditures. Both Western Europe and North America were now firmly inclined to attain the desired goals.

Somewhat later, early in 1954, it became evident that a number of factors made the achievement of the force goals within the given time limit impossible unless an industrial mobilization was to be carried through.

There were many different factors such as the continued commitments of the European countries in the Far East, the United States obligations in Korea, and the continuous lack of stability of Western European currency. While it had been possible during the war to convert factories from peacetime industry to wartime production within a short space of time, this proved to be very difficult in time of peace. The situation was not deemed so serious by the people that they were willing to give up normal consumer goods. The consequence was that factories gen-

erally maintained their normal production, and the industrial agencies that received major contracts for military equipment built new factories for that production. Delay in delivery time was the consequence.

The ultimate target of the Lisbon agreements had been to enable the West to obtain a reasonable state of security in Western Europe so that negotiations based upon strength could be conducted with the Soviet Union. But now the Western World gradually had to realize that as far as conventional forces were concerned this would not be possible in the foreseeable future.

Transition

The old proverb, that the darkest hour is nearest the dawn, probably is the one which is most pertinent to use to mark the transition from the second to the third phase, as the leaders of the West actually did succeed in making a virtue of this necessity. To understand this one has to understand the outline of NATO's military structure.

The military forces of NATO can be divided into three major components. The first of these is the strategic air force whose task is to hit the enemy's homeland, including his administration, industries, and lines of communication—the main purpose being to eliminate the framework of the activities of the enemy military forces. The second element is the ocean-going naval force whose task is to form a bridge between North America and Western Europe, thus permitting the full utilization of the North American resources on the battlefields of Europe. The third category is the ground forces, the tactical air forces, and the tactical naval forces. The strength and ability of these forces will decide whether our territory in Europe can be held until the strategic results can bring their influence to bear on the battlefield.

The possibilities which appeared at the end of the second phase are primarily due to NATO's enormously increased strategic capabilities because of the considerable stocks of nuclear weapons and the ability to deliver them wherever needed.

The effects of these weapons are in themselves the greatest war-preventing factor which we possess. Their possibilities are such that should war occur, fabulous explosives can be delivered over any target within the enemy territory by means of NATO's modern air forces and, in the near future, probably just as well by means of guided missiles. There is reason to believe that the obtainable results will be the disintegration of the enemy's ability to support his military forces.

It can of course be said that the Soviet Union possesses means for carrying out atomic warfare also; but, presumably she does not possess the weapons in the same quantities as the West, and Soviet delivery means are not believed to be as good as ours. Finally, the Soviet Union's geographical configuration is such that she can be attacked from all sides, while her attacks against the West are easier to canalize.

The introduction of atomic weapons has had an essential influence on the tactical forces. These forces can partially rely on the overwhelming strategic results that will affect the enemy tactical forces more rapidly. The tactical defense especially will benefit from the increased explosive power resulting from the introduction of atomic weapons to the battlefield proper.

Today NATO possesses strategic capabilities which, in themselves, are of a significant war-preventing nature and which, if war should occur, make it likely that the West will win. The present inability to realize the Lisbon force goals will, therefore, mainly influence the problem of how much Western European territory will be lost before the Soviet Union is forced to her knees.

A decisive factor in this connection will be the establishing of West German forces for the defense of the territory of the Federal Republic. When West German forces are a reality, they and the present forces of the other member nations, combined with the use of tactical atomic weapons, lead us to believe that only small areas will be lost and these only for a short period of time; this, of course, is dependent upon the forces being continuously supplied with completely modern equipment and being adapted in other ways to modern warfare.

Conclusion

This problem has not been solved without being colored by emotional considerations. It must be clearly realized that if Western Europe is to succeed in maintaining her present standard of living, the creation of West German forces is a necessity. Even the slightest fluctuations of Soviet foreign policy should not be decisive in determining whether the people of Western Europe shall be allowed to continue their life in a relative state of security. The creation of these West German forces is in itself an entire chapter in the politico-military development of Western Europe during the postwar years.

The military efforts of Western Europe are bound to appear as a result of a balance between the military threat under which we live and the demands of the "cold war," including, first and foremost, the necessity for maintaining social conditions to forestall Communist expansion.

Soviet military capabilities are considerable and the varying factor in the evaluation of this threat is Soviet foreign policy. In the last few years, we have frequently observed fluctuations in this policy —from Stalin's uncompromising attitude via Malenkov's peace offensive to the incalculable situation of seemingly renewed appeasement which the fall of Malenkov has apparently evidenced. All this, however, should only be interpreted as movements on the surface until we are decidedly convinced of the opposite. The long-term aim of the Soviet Union, that of world revolution, is undoubtedly unchanged.

A Danish newspaper some time ago expressed indignation at the reduction of the length of compulsory service in Denmark, stating that it fluctuated with the cost of living. Being a citizen of Western Europe, I will be just as indignant if every siren call from the Kremlin involves changes in the defense efforts of the West. The greatest social boon which governments can bestow on their people is freedom, and, as expressed by the Norwegian poet Nordahl Grieg, *"Freedom is not a thing you just have; it must be gained, over and over—again and again!"*

The West German Republic, representing over two-thirds of the German people, has eagerly turned toward the building of a European community in which its own nationalism would be submerged.

It is indeed a historic moment when the Germans have come to realize the danger to themselves and to all of Europe if their energies are confined to nationalistic channels and if their future success must be measured only in terms of national grandeur.

Secretary of State John Foster Dulles

ARMOR
PAST, PRESENT, AND FUTURE

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The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

SEVERAL years ago, *Collier's* carried an advertisement wherein Mr. Charles F. Kettering, one of the country's foremost research consultants, was asked in an interview, "What makes men successful?" His studied reply, in brief, was as follows:

First, develop the desire and ability to create. . . . something no one has ever done or been able to do before. Second, acquire the quality of persistence, the urge to keep going until a job is finished. . . . Third, be dissatisfied. This seems to be the standard equipment of successful men. Regardless of how outstanding their work appears to the world, they themselves are never satisfied and are sure if they had it to do over, they could have done a better job. . . . Successful men are never fooled by the limitations of the past, they know that new opportunities always lie ahead.

The philosophy expressed by Mr. Kettering is particularly adaptable to the military's continuing search for new and better ways of achieving rapid and decisive victory in war with only the absolute minimum in casualties. To the inquisitive mind, such a philosophy offers a logical basis for analysis in an attempt to find a better weapon, a better organization, and a better tactical doctrine. As Field Marshal Montgomery has said, "The key to our survival in a future war may well lie with the scientists. Military thought and tactical doctrine must always be well in advance of the times. . . ." Faced as we are now with the awesome probability of atomic warfare, combined with the potential threat offered by the armed hordes of Communist China and the Soviet Union, preparedness for the present and the future is vital—we must search for weapons, equipment, organization, and tactical doctrine which will provide the greatest prospect of success if and when war should come.

Purpose

With the recently authorized significant increase in armored divisions, more and more interest in the past, present, and future of armor is being aroused. Such interest is beneficial not only to armor but to our military progress.

With Mr. Kettering's philosophy and Field Marshal Montgomery's thought in mind, the purpose of this article is to

Armor must prepare to conduct sustained offensive, defensive, and retrograde operations; they may no longer enjoy the luxury of frequent reserve or rehabilitation periods they knew in World War II

stimulate thought pertaining to armored tactics. To accomplish this, it seems wise to look first at some of the general lessons learned from our most recent wars, and then to establish basic assumptions on the use of atomic weapons. Such an attempt may enable us to better portray our weapon and equipment requirements to the scientist, and to design the organizations best suited to execute tactical concepts.

National Policy

Our current national policy indicates that we will not be the aggressor—the initiator of a future war. If and when World War III (or a lesser conflict) breaks out, the time, the place, and the first blow will be that of the enemy.

In none of the last three wars have we been faced with fighting over our own countryside or with the likelihood of destruction of our home populace and industry; nor have we been faced with the necessity for rapid entry into full-scale combat in an overseas theater. (Korea taught us some of the difficulties on a limited scale.) We have not been faced with having our troops disposed in an overseas theater in strength and in positions of almost immediate contact with a probable enemy force of greatly superior strength. The next time that ominous expression "total war" is sounded, we must be ready militarily as we have never been ready before if we are to be able to survive.

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Assumptions

With these thoughts in mind, on what assumptions or guides shall we base our tactical concepts and planning for a future war? Strategic and tactical atomic war? Tactical atomic war? Nonatomic war? One approach to the question has been presented by Admiral Robert B. Carney:

If we are honest with ourselves, we will acknowledge that there are big wars, little wars, general wars, localized wars, Marquis of Queensbury wars, and savage, ruthless wars, atomic wars and, perhaps, nonatomic wars. What can we expect? What can we count on to guide us in our planning? . . . I cannot, nor can anyone else, forecast the blueprint. . . . Confronted with great uncertainty in this respect, I see no alternative but to hedge our strategic bets, ready to rush into the future, but also prepared to meet, and rely on, the methods of the recent past.

In 1954 Mr. Hanson Baldwin, the reputable military analyst, likewise expressed the opinion that we should be prepared to fight with or without atomics.

Should our planning visualize only tactical employment of special purpose weapons? Is it more realistic to conjecture that the employment of atomics in either the tactical or the strategic sense will result in an all-out thermonuclear war? Another appropriate question is whether or not our allied forces are capable of defeating the Soviet Union or Communist China without the tactical use of atomic weapons.

The "First Blueprint for Atomic War" for NATO forces is described in the 25 February 1955 issue of *U. S. News & World Report* by Robert Kleiman as follows:

NATO's powerful 400,000-man Army in central Europe has received a new directive—to stand and fight for West Germany, if Russia attacks, rather than retreat to the Rhine. This 'forward strategy' is the

first result of a historic 14-nation decision to base all Western defense plans on tactical use of atomic weapons. . . . The old idea was based on the concept of a 'race to the Rhine.' . . . The new atomic strategy, in contrast, will see most of NATO's active divisions in Germany, five of them American, committed to battle immediately Russia attacks. As soon as Soviet invaders lift the Iron Curtain, they will be met and engaged with atomic weapons at the very 'threshold' of West Germany. . . . New tactics, to go with the new strategy, are being developed. . . . The mission of NATO ground forces will be to employ conventional arms, terrain obstacles, maneuver, and stratagem with one overriding purpose: to locate and force Soviet troops into concentrated atomic targets. . . . Russia can only be defeated by employing from the start the superior United States nuclear stockpile.

This study by NATO, as reported by Mr. Kleiman:

. . . does not go beyond 1960. But it implies that security, after 1960, will depend on new 'retaliation' weapons now only in the development stage.

Another indication of our probable retaliatory use of special purpose weapons can be drawn from the warning allegedly issued to Communist China by our Secretary of State: that if war should be initiated by Communist China in the Pacific, the United States is capable of striking back with devastating and heretofore unequalled force.

In view of these attitudes, the only firm assumptions that we can make in regard to the use of atomics are as follows:

1. We must be prepared to fight under conditions of atomic warfare.

2. We must be prepared to defeat the enemy on the ground without atomic weapons.

In other words, our course must be as General Matthew B. Ridgway has said:

Because we value human life so highly, it is incumbent upon us to follow the course which, if war comes, will lead to the most rapid success, the lowest cost in human life and suffering. . . .

The Tank

In World War I the tank was introduced as a new offensive means of overcoming strongly organized and static defenses. However, it was employed only as an infantry support weapon on shallow or limited objective attacks. Some of the limitations encountered include excessive mechanical failures, inexperienced tank crews and commanders, and apparent failure to appreciate the full potential of this new weapon by committing the tanks prematurely and piecemeal. Nevertheless, it must be remembered that tanks were a new development and there were "bugs" to be worked out; that they were lumbering armored caterpillars; that control, resupply, and maintenance presented difficult problems; that numerous trucks or armored infantry carriers were not available to enable following and supporting infantry to assist the tank force in exploiting local opportunities; and that commanders were generally *unfamiliar with the capabilities* of these new tanks.

Postwar Developments

Following World War I mobile-minded enthusiasts such as General Adna R. Chaffee, Jr., Colonel J. F. C. Fuller, B. H. Liddell Hart, and Lieutenant General Sir Giffard Le Q. Martel propounded theories on mobile warfare with armor. In spite of their protests, however, the development of tanks and tactical doctrine for armor suffered both in the United States and in France. Although the British had the foresight to appreciate the mobile concepts of these enthusiasts, they lacked the finances to produce tanks in adequate quantities. The German Army studied this new mobile concept and, under the tutelage of

such forward thinkers as General Heinz Guderian, willingly adopted and trained according to the theories of the British and manufactured tanks in quantity.

In this country we vacillated between the infantry-support role and the cavalry role for tanks until, finally, in 1935, the cavalry-role enthusiasts were authorized to organize the 7th Cavalry Brigade (Mechanized) at Fort Knox, Kentucky. Although the French organized armored divisions, they adhered rather closely to the infantry-support concept. The Soviets produced numerous tanks, but like the French, they adhered primarily to the infantry-support concept.

In short, between world wars, only Germany had the foresight to recognize the offensive and defensive potentials of the tank. From this foresight developed the blitzkrieg tactics of 1938 and the early 1940s—and the downfall of nations.

World War II

On 1 September 1939 Germany proved to the world that she had mastered the art of mobile tank-air warfare. With shattering rapidity, her Panzer divisions and Air Force annihilated Poland's 60 divisions. Then, the Panzer divisions and Air Force turned west and overran the once mighty Army of France and the Maginot Line defenses. In this campaign it is of interest to note that the French concept of using tanks primarily in an infantry-support role hamstrung the valiant efforts of the piecemealed armored units to stop the German armor. Had the French armor been employed in mass, the German penetrations might have been contained or even destroyed. It is interesting to note that *France had more tanks than Germany at this time.*

On 22 June 1941 the German Army launched Operation *Barbarossa*—the invasion of the Soviet Union. By concentrating her Panzer groups against extremely deep objectives and taking advantage of surprise, Germany hoped to achieve a rapid and decisive victory against another numerically superior enemy. The armored spearheads were almost within sight of Moscow when the tide turned against the Germans. Contributing factors in Germany's defeat on the east front include the rigors of terrain and weather; the breakdown in tank replacements partially the result of Allied bombings of factories and rail centers; the surprising capability of the Soviet Army to withdraw deeper and deeper into the Soviet Union, then to counter with large reserves; the failure of Germany to concentrate on Moscow as the vital objective; and the German failure to adopt a mobile defensive-offensive concept (when the Soviet Union took the offensive) rather than static measures to hold ground at all costs.

There were limitations and lessons to be learned from the North African and western European campaigns. The British proved the suitability of the mobile concept on the desert and the distinct advantages of armored troops over nonarmored in desert warfare. However, the most effective lessons on the desert were learned from Field Marshal Rommel and his *Afrika Korps*: the offensive potential of a small armored force and its adaptability to conduct retrograde, ambush, and defensive operations. In its initial actions on the desert, because of requirements imposed by higher commanders, our armor demonstrated the ineffectiveness of piecemeal commitment. Later, however, it demonstrated the capabilities of armor in mass by effecting its own penetration, then exploiting through the "mousetrap" in the race to Bizerte.

In western Europe, Allied armored divisions were generally employed according to the mobile concept until our logistical difficulties enabled the German Army to regain its balance. Various roles played by armored divisions in western Europe included the following: exploitation of

carpet bombing; penetration of enemy defenses, followed by exploitation to a deep objective; exploitation of infantry division's penetration; breakout from encirclement; pursuit and encirclement of a large enemy force; effective use of task forces of combat command size under the division's control; seizure of key bridges intact; encirclement of key communication centers; rapid concentration for defensive-offensive operations against a large enemy penetration; piecemeal attack against superior enemy forces; protection of an army flank; piecemeal counterattack by units of the division; aggressive defense against superior forces; and link-up with a large airborne effort. With only few exceptions—such as the race to the Seine, encirclement of the Ruhr, and encirclement of the Saar-Palatinate—were there two or three armored divisions employed in an "armored corps" type operation. In Operation *Market-Garden* a combination of mobile units—armor, airborne, and air—was employed to seize a decisive objective. Whereas the German Panzer divisions were badgered night and day by Allied air forces, our armor was relatively unhindered by enemy air. One technique we learned well was the employment of tactical air in support of ground operations. Another lesson was that a "continuous line" advance consumes a great deal of combat power. Additional lessons learned include the following: the advisability of substituting the tank for the tank destroyer as the best antitank means; the terrific clogging of roads; the overconcentration of troops involved in the passage of lines; the stunned effect on troops when confronted with superior armored threats; and the necessity for fighting with combined arms teams.

In Korea there were no armored division actions, although the North Korean 105th Armored Division worried many United Nations division G2s by its presence. However, there were tank battalions and regimental tank companies. The initial attack by the North Koreans was spearheaded by four battalions of Soviet *T-34* tanks which terrorized and overran the South Korean troops who had no tanks. When the United Nations introduced medium gun tanks and the enemy was unable to replace tank losses, the enemy tanks were no longer capable of dominating the action. It is worth noting that our fighter aircraft destroyed more enemy tanks than did our own tanks. With the exception of the initial attack and our breakout to the north, in conjunction with the Inchon landings, armor was reduced to an infantry-support role. Occasional armored raids and counterattacks were employed, but in a comparatively infantry type role.

Our tank limitations in Korea might be summarized as follows: unfavorable terrain and weather, initial lack of tank means, type of enemy action, frequent reluctance to commit tanks, mechanical unreliability and limited cross-country mobility of newer model tanks. Although mountainous, studded with rice paddies, and sadly lacking in highways, it might have been practicable to employ combat command size armored units. Likewise, one armored cavalry regiment with each corps, supplemented with horse cavalry in the hills, might have greatly relieved the infantryman of many punishing missions.

Present Tactical Doctrine

Within the framework of our present "type corps," as used for academic purposes, there are over 1,100 tanks. At first glance this might indicate that our type corps is actually an armored corps. However, this is not the case for each of the three infantry divisions contains about 150 tanks; the armored cavalry regiment contains about 125; the armor group contains 200; and the armored division contains 350 tanks. Only in the armored division are tanks found in mass, with adequate armored infantry, artillery, and en-

gineers, and the necessary combat support and logistical elements for sustained operations.

The armored cavalry regiment is principally employed for reconnaissance, security, and light combat missions. The armor group contains only tanks and is generally employed to reinforce the tank strength of divisions of the corps. The tank units of the infantry divisions are employed to support the nonarmored infantry. Consequently, of all the tank units presently found in the type corps, only the armored division is designed for employment in a truly mobile, sustained combat role.

Based upon its organizational characteristics of battlefield mobility, armor protection, extensive radio communications, heavy firepower, and flexibility, the armored division is presently considered to be well suited to execute missions such as exploitation, pursuit, covering force (in advance or in retrograde), counterattack, and mobile defense. On the other hand, although capable of accomplishing any reasonable ground mission, the armored division is considered less well suited to execute missions requiring either a penetration of an organized enemy position without use of atomics or a position defense. In brief, the present tactical doctrine on employment of the armored division visualizes mobility as the keynote.

Kurt Gilbert, a former member of the German Panzer force, draws the following appropriate conclusion from Germany's experiences with armor in World War II:

A certain school of thought sees the tank as an instrument to support the infantry in attack and defense. Another sees it as a strategic weapon which, in the form of divisions or corps fulfills in an offensive manner even defensive missions. Only this latter concept corresponds with the real nature of the tank; all the others rob it of its principal element: mobility.

Likewise, Lieutenant General Sir Giffard Le Q. Martel, a foremost exponent of armor in England who fought against Field Marshal Rommel's Panzer division in 1940 at Arras and who headed the British military mission to the Soviet Union in 1943, had the following to say, in 1952, on armored warfare:

We went sadly astray in certain directions after World War II. We have seen that if we had built up a number of armored divisions instead of so many infantry divisions between the wars we might have stopped Hitler's rapid advance and saved France. This might well have halted the entire war. We made the same mistake again after the war. The only possible enemy was the Soviet Union, and she had great numbers of infantry divisions. It was not until much later that she was able to build up armored forces, and they are still very short of mechanical transport on which armored forces so largely depend. . . . We now realize the foolishness of trying to take on the Soviet masses in this way (with infantry). Instead, we are now concentrating on raising as many armored divisions as possible. . . . It is becoming accepted that these divisions should be used in a highly mobile role to attack the enemy in flank and rear. They must use their mobility to avoid attacking strength. Mobility replaces strength and numbers. This is the way to take on the Soviet masses if war should arise . . . mobile warfare could certainly be repeated today if the Western Nations had the necessary forces.

The Soviet Situation

It is well to look briefly at the Soviet situation with respect to strength and tactics. One thing is certain: the might of the Soviet Army must not be underestimated. However, the corollary is also true: we must not succumb to the theory that the Soviet Army is invincible. Still another

corollary would appear to be a basic assumption: even without atomics or similar special purpose weapons, the Western allies are capable of defeating the Soviets. Consequently, our approach in analyzing our own weapons, organization, and doctrine should be based upon the realistic realization that war with the Soviet Union —and with Communist China—is possible, is seemingly probable, but not necessarily unavoidable.

The Soviet Army is now believed to include approximately 175 divisions, of which about 65 are either tank or mechanized. It is believed, however, that many of their rifle divisions are now being converted to mechanized divisions. Rifle divisions are being motorized. In addition, there are believed to be 80 satellite divisions.

It was estimated by Field Marshal Montgomery in his 24 May 1954 speech to correspondents that:

The USSR, Eastern Germany, and the East European satellites today have over 6 million men under arms. Approximately 4.5 million of these are in the ground forces. . . . The USSR has a readymade spearhead for a rapid advance into western Europe . . . composed of 22 Soviet divisions in Eastern Germany, the bulk of these armored divisions. . . . Behind this spearhead there are an additional 60 Soviet divisions located in the eastern European satellite countries and western USSR. (This does not take into account satellite divisions.) . . . the Soviets have more than enough tanks, mortars, and antitank guns for about 300 Soviet divisions.

Soviet tactics derive from their generally accepted principles or "permanently operating factors" which are similar to our principles of war. In his book, *Soviet Military Doctrine*, Raymond L. Garthoff makes the following observation with respect to these permanently operating factors:

It is significant that these five (or six) factors are elevated to the importance ascribed, at least verbally, to them. The stress placed on the 'stability of the rear' may betray a Soviet fear of instability and unreliability in their own country. Together with the 'morale of the army' it indicates an acute awareness of the need to maintain strong morale both at the front and in the rear and at the same time to weaken the enemy's morale. . . . The interest in the 'quantity and quality of divisions' and in the 'armament of the army' indicates a high degree of concern for this material means of war (although recognized as essentially important in all armies, these factors are not usually considered basic principles of war). The stress placed on the 'organizing ability of the command personnel' is indicative of a special need for overcoming other deterrents to initiative and securing the organizing ability of officers.

Other principles of Soviet doctrine pointed out by Raymond Garthoff include "mandatory annihilation, determination of the direction of the main blow" which are somewhat foreign to us; and the offensive, concentration of force, maneuver, and cooperation or combined action.

The Future of Armor

Thus far we have looked at the potential enemy, some of the lessons learned from the past, and have made basic assumptions pertaining to atomics. With these in mind, what, then, is the future of armor? In what roles can our armored divisions be cast effectively in the near future? What changes in organization and equipment seem warranted for the immediate future?

First, armor is our brightest ground star—particularly when teamed with air in a major theater of operations, as opposed to localized wars. Atomics are extremely important weapons; however, the late General George S. Patton, Jr. wrote of new weapons:

When Samson took the fresh jawbone of an ass and slew a thousand men therewith he probably started such a vogue for the weapon, especially among the Philistines, that for years no prudent donkey dared to bray. Yet, despite its initial popularity, it was discarded and now appears only as a barrage instrument for acrimonious debate.

It would seem that we cannot afford to go completely overboard on atomics. Additionally, if we employ atomics, the enemy retaliates with atomics, or vice versa. This again enhances the value of the armor protection, the mobility, and the radio communication available to armored units.

If atomics are used tactically, they should be exploited without delay. Again, the mobility of armor and its tremendous firepower are highly advantageous. On the other hand, if atomics are not employed it would seem that our hopes should rest in taking maximum advantage of mobility on the ground, in the air, and on the sea. In a general war, from analysis of the nature and strength of the probable enemy, the presently estimated tactical doctrine of this probable enemy, and the terrain in Europe (or China) over which future battles may occur, armor is vital for success in the immediate future. In a lesser theater of operations, such as localized wars, in all likelihood armor will play as vital a role as the terrain and the mobile-mindedness of our commanders will permit. Again the question of atomics arises, and whatever the answer, we must be prepared.

In writing of the "Infantry in Modern Battle," in 1954, General Sir Richard N. Gale had the following to say of the power of armor:

Memory is sometimes short and theory is sometimes sweet. A heavy tank still in action dominates the battlefield on that spot where it stands. A larger number of them merely extends the size of the spot. If the theorist tells you this is not so, disbelieve him. . . . Sufficient numbers of these heavy tanks, whose devastating fire can be supplemented by normal artillery, can provide enough cover to permit the remainder of the tanks to press their attack home. Tank strength is a factor in the conduct of modern battle which you cannot ignore. The correct handling of this potential force should dominate tactical thought.

Consequently, armor looms as our greatest potential for success. It can and will accomplish its assigned combat missions as successfully as we organize, equip, and train it. This requires continuing thought as to what missions are proper, what influences the probable terrain and enemy may exercise, and what organization and equipment we shall need to accomplish these missions against the likely enemy.

Future Employment Concepts

This article seeks to stimulate thinking on considerations about which too few really qualified experts have written. Because this article is unclassified, some of the important considerations and thoughts must necessarily be omitted. Nevertheless, the influences or concepts visualized herein are based on the over-all mission of armor, the probable enemy's situation, the probable terrain involved, the past limitations in employment of armor, our own present situation, and the assumption that we must be prepared to win the ground battle either with or without atomics.

1. It is visualized that the principal division in the immediate future will be the armored rather than the infantry division. Consequently, the armored division will no longer, as in World War II, enjoy the luxury of frequent reserve or rehabilitation periods. Rather, it must be prepared for sustained offensive, defensive, and retrograde employment.

2. It would appear that our "continuous line" advances of World War II are now

obsolete. Instead, as visualized years ago by Marshal Saxe and more recently by the Fuller-Hart-Guderian advocates, several large armored formations will maneuver from infantry-antitank bases which will be held along mobile defense lines. Within the maneuvering elements of corps size, in all likelihood two armored divisions will advance abreast, followed and supported by the motorized infantry. The nature of this attack may initially see a continuing sequence of leapfrog actions wherein combat commands attack through, or around, each other to seize and secure relatively limited objectives. This would give depth or security to the attack against the deeply echeloned enemy position and reserves; and, particularly, this would maintain the momentum of the deep attack by commitment of fresh troops. By frequently employing airborne—parachutists, helicopter, and air-landed—troops, as a forward pass in football, the enemy defenses cannot concentrate against only the forward line, but will have to hold out strong reserves to meet the airborne assault or threat as well. Link-up distance should be based primarily upon a realistic appraisal of the time it will take the attacking armored divisions to reach the widely dispersed airhead; the ability of the enemy to react; and the strength, nature, and importance of the objective—all learned from the Arnhem operation of World War II.

Infantry divisions, which should retain their present organization essentially, will be employed primarily as follows in a general war: to hold these bases; to follow, support, and protect the flanks of the armored column; to clear built-up areas; to effect penetrations where terrain or fortifications render it more suitable; and to conduct generally limited offenses, particularly under night and adverse weather or terrain conditions. Of one thing we can be certain: the infantry division is a fine organization and, in the past, has been as flexible as its regimental and division commanders have permitted it to be. As such, in a localized war such as Korea or Indochina, it will again be the principal ground division and will perform as nobly as in the past. However, in a general war against the Soviet Union or Communist China under atomic warfare conditions—which will probably be adhered to whether or not the weapons are actually employed—it is believed that the armored division is better suited to serve as the principal ground division.

3. The "indirect approach" concept propounded by B. H. Liddell Hart warrants our close attention. Traditional avenues of approach to key objectives such as Berlin and Warsaw must be avoided. We can anticipate these avenues to be highly organized in depth. Instead, we must seek out the "Ardennes" type approach in order to achieve deviation and surprise by virtue of the unexpected direction of attack. This will enable us to take advantage of armor's capability to concentrate rapidly, and to gain the enemy's lucrative rear areas either by penetration through weaker defenses or by envelopment of strength. This will also enable us to entrap sizable enemy forces.

4. The calculated risk, the bold and aggressive spirit, and the initiative of subordinate commanders should be taught and fostered. The "time compression" and "absorptive power" referred to in the NATO New Approach (described in *U. S. News & World Report*, of 25 February 1955) will require mission type orders, rapid reaction to changes in the situation, acting on oral orders, and the spirit and initiative to keep on fighting even under extremely adverse conditions.

If atomics are employed, the close combat job on the ground will be just as rugged. Just as the Soviet Army trains its armored and horse cavalry units, the allies must train their armored, infantry, and airborne divisions—emphasizing the

calculated risk, and bold and aggressive tactics. To achieve this goal, our senior tactical commanders must appreciate the mobile-minded approach employed by Generals Patton, Stuart, and Sheridan. Our senior armored commanders also should be given the opportunity to maneuver large armored units to acquire what B. H. Liddell Hart calls the art of "tank warfare" as the Germans acquired it—prior to battle.

5. In addition to the offensive roles now emphasized for the armored division, it is visualized that the following will not be unusual: penetration of enemy defenses, with or without atomics, and assault river crossings. The ability to concentrate rapidly, with armor protection, and to move rapidly into the attack warrants employment of the armored division in this penetration role, particularly if atomics are used to breach enemy defenses. This enables the armor to take immediate advantage of the breakthrough, and facilitates or eliminates the passage of lines. Likewise, armor should be equipped to give the breakthrough more versatility tankwise with respect to river obstacles, in order to enable the division to exploit the advantages accruing to the attacker. At present, the *M59* armored infantry vehicles enable the armored infantry to swim major rivers. Tanks might also be given this capability.

In addition to these two roles previously discussed, it may be that armored divisions, equipped with lightly armored amphibious vehicles, can be employed as the leading elements in amphibious operations. Armor is appropriate wherever we can accomplish the job faster and save lives by ground mobility and armor protection.

6. Tanks will be employed in mass, not piecemeal. Against a potential enemy such as the Soviet Army, tank losses initially can be expected to be sizable. Large stocks of tanks and ample replacement crews must be available without great delay. To locate tanks in needless quantity in other than the armored divisions seems economically wasteful and tactically unsound. It would seem that only the minimum number of tanks should be allocated to the infantry division to provide it antitank and tank-support means. The World War II tank battles of North Africa and eastern Europe are indicative of future tank battles with or without atomic weapons. Field Marshal Rommel taught us the value of maneuvering tanks in mass for decisive tactical success. Guderian and others point out the results suffered by the German Panzer units when replacement tanks were no longer available in quantity.

7. Our tactical operations initially will be opposed by massed enemy aircraft. For this reason it will be particularly important to emphasize again all aspects of troop movements and air defense measures to armored units. The movement of armor over main and secondary roads to assembly areas under night conditions; the passage of armor through infantry units or avoiding such passage where practicable; the early cross-country deployment of units in the attack; the maximum use of cover and concealment; the circumvention of bottlenecks—these and similar measures will, in all likelihood, be particularly important if we base our thinking upon the lessons of the past and the probable enemy air strength. Our development of tactics and techniques should not overlook these considerations. Column-cover aircraft may not be available in the early stages until our Air Force can gain control of the air. Likewise, antiaircraft with the combat elements can serve only as a deterrent measure. Supply convoys will be harried, delayed, destroyed, or forced off the roads. Time and space considerations will bear greater attention both in training and in combat execution. In short, we must be prepared to fight armor effectively in the face of superior enemy air.

8. The armored division frequently will

be required to fight retrograde operations. In his article, "Decision in the Face of Defeat" (MILITARY REVIEW, March 1955), Colonel Alexander D. Surles has realistically portrayed the need for basic changes in doctrine. In the past we have been woefully lacking in our training and in our emphasis on retrograde operations. Against the Soviets or the Chinese Communists, we could find it extremely worthwhile to have adopted Colonel Surles' proposals on retrograde. In furtherance of his comments, how many unit training hours are devoted to retrograde? How many hours do our service schools devote to retrograde? Again, not enough. The subject card files or catalogues in our libraries reflect the general lack of interest of American military writings in retrograde. However, the German Army—and it could never have been accused of being defensive minded—placed primary emphasis on retrograde in training prior to World War II.

Because of its mobility and armor-protected firepower, the armored division is better suited than the infantry division to fight a delaying action or cover the withdrawal of a larger unit. To accomplish this covering or delaying action, the division trades minimum space for maximum time, avoids decisive engagement, and maintains contact with and inflicts maximum punishment on the advancing enemy. In the past our delaying or covering force doctrine has prescribed a light line of delaying troops to cover avenues of approach and that withdrawal from one position to the next should be effected during darkness if possible. Based on past Soviet tactics against the withdrawing German forces (in addition to the measures indicated by Colonel Surles), it is visualized that the division may have to deploy in somewhat greater depth and give greater attention to security on the flanks.

By virtue of its cross-country mobility and its type of firepower, armor is well suited to effect its withdrawals in dispersed formation during daylight, accomplishing its delay between, as well as along, defensive positions. Another consideration for armor in delay is the ambush, employed to destroy and slow down an impetuous enemy. Field Marshal Rommel taught the value of luring enemy tanks into a trap. We will do well to learn this technique and to combine it with atomic weapons, if used.

9. In its mobile defense, armor must solve the problem presented by the Soviets' and Chinese liking for and skill in infiltration. The Germans learned that every Soviet bridgehead or advanced unit within their "lines" had to be attacked and destroyed immediately. Otherwise, with their ability to infiltrate farther and then disappear into the ground, they built up strength and were difficult to handle.

Another tactical trait of the probable enemy is his fondness for seizing high ground whether of tactical value or not, although repeated attacks throughout the night were required. Likewise, the Soviets thought little in the past of repeating an attack three or four times at the same place and in the same way even when they were repulsed with tremendous losses. Consequently, it would seem that solutions to some of the following problems may be particularly important to successful mobile defense: devices to maintain contact with the enemy in gaps—through sound, sight, or light; patrols; preparation of alternate strong-point positions for occupation during darkness; assurance of communication laterally as well as in depth; rapid employment of local reserves to destroy small groups; ambush tactics; avoidance of overextension; and rolling with the blow.

In general, it seems that our mobile defense concept is sound and workable. General Claude Auchinleck devised the "chequer of localities" defense on the desert as a means of meeting the *Afrika Korps*

attack and then countering heavily with armor against Field Marshal Rommel's flank and rear. Our mobile defense is likewise intended to capitalize on mobility, to destroy the enemy.

10. The development of tactical doctrine for armor should not overlook the alleged weaknesses evidenced by the probable enemy's permanently operating principles. For example: deep armored or airborne thrusts into his rear areas, to play upon his alleged unstability; by capitalizing on the lack of initiative permitted the subordinate commanders; or through analysis of his set patterns on preparations for an attack, to withdraw to flank or rear positions, then ambush or counterattack the attacker.

In the development of future doctrine, we must not approach it by studying only the narrow front offered by one particular theater of operations. For example, we should not be unduly impressed with the importance of the defense by studying only World War I and Korea; nor with the overpowering offense by studying only the Civil War and World War II. We should persistently attempt to avoid past limitations and thereby do our job better than it has been done heretofore.

Changes

What changes in organization and equipment are warranted for the immediate future? Consideration of changes deemed advisable involves going from the broad brush, at corps level, to the fine-line pen stroke—the individual tank. The foremost change would involve the redistribution of tanks to accomplish a more desirable ratio of mobile, armored combined-arms teams and less dissipation of the tank effort throughout the "type corps."

To accomplish this the infantry division should lose its regimental tank companies, but retain one medium or heavy-gun tank battalion of four lettered companies, with approximately 70 tanks, to provide it with effective antitank, offensive combat power and counterattack mobility. The armored cavalry regiment should remain essentially as constituted, with respect to light and medium-gun tanks. The armor group should be eliminated. This would then permit a saving of almost 300 tanks for each corps—which would almost equip another armored division. Therefore, the result of this redistribution would be to provide for greater concentration of tank effort; to provide for greater mobile combat power for decisive results; and to provide for the additional armored divisions required for several armored corps, each to consist of two armored divisions and one partially mechanized—partially motorized infantry division.

Within the armored division proper, the major changes deemed advisable include the following: those truly essential supply and service trains should be equipped with lightly armored vehicles capable of cross-country mobility and with a helicopter transportation unit; the ratio of combat to noncombat troops should be increased, by elimination of administrative and logistical personnel where at all practicable; the heavy-gun tank battalion should be changed to include four lettered companies; the fuel consumption and the cross-country mobility of the tanks and other armored vehicles should be greatly improved, particularly with a view to full-scale operations over muddy or frozen terrain; the main armament of the tank must be made as potent as science and a weight limitation of approximately 45 tons will permit but the human element of the crew inside the fighting compartment and its battlefield maneuverability must not be overlooked; simplicity, necessity, durability, and "maintainability" should keynote accessories, with a view to elimination of gadgets and overly complicated mechanisms from tanks; greater mechanical reliability is required to eliminate neces-

sity for frequent reserve maintenance periods; and communications for armor must be kept simple, must be reliable mechanically and easily repaired or replaced, and must provide the large number of channels required for efficient control of deployed units.

Summary

In conclusion it would appear that our fundamentals are sound. The thoughts proposed here do not foresee the necessity for changing fundamentals. They do visualize the advisability of placing greater emphasis on some fundamentals and less emphasis on others in order to stimulate our thinking on armor in future war. This will assist in preparing us for that day—should it come—when armor will prove that it can cross the Steppes of the Soviet Union or the plains of Communist China.

In 1932, in his *Lectures on F. S. R. III*, Major General J. F. C. Fuller wrote what we have adopted as our summation in the following:

For many years now I have urged that general tactical training for war demands two books, one dealing with present-day warfare, and the other with future warfare. I have suggested this time and again, because we are living in a transitional military age, and were war to break out tomorrow, unless we have carefully thought out future possibilities, however full our knowledge of actualities may be, we shall be most indifferently prepared to wage it. . . . Adherence to dogmas has destroyed more armies and lost more battles and lives than any other cause in war.

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LESSONS OF THE GERMAN DEFEAT

Doctor Hans Karl Gunther, *Ph.D.*
Document Library, Stanford University

The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

OVER 10 years after the conclusion of hostilities in Europe some of the vast wartime misconceptions have been forgotten. Large amounts of source materials have been published and expert analysis has been voluminous. Sizing up the overwhelming quantities of literature, certain obvious conclusions present themselves like pieces fitting into a pattern.

Although it is true that aggressive war seldom achieves its purpose and that it is all for the better that Hitler lost, that is not the question. The point is that Hitler, having made up his mind to unite all Germans and gain control of eastern Europe, determined on a war to achieve his purpose. He would have preferred to fight a local war, of course, but ran the calculated risk of a general conflict. *He and his National Socialist Government lost that war through their own blunders.*

Germany's defeat was a direct consequence of her totalitarian form of government. The much-vaunted efficiency of dictatorship was largely a figment of the imagination and it was bound to fail because of the human element involved. As it was the Third Reich lost on every major count: on the production front, in strategy, tactics, and psychological warfare; it made the wrong decision in the most crucial phase. The National Socialist Government, and especially Hitler himself, was deficient in judgment and foresight, two essential qualities of leadership.

The first of the great disasters befell the Luftwaffe and ultimately was due to the fact that the German air arm had been developed only to be a tactical weapon and was asked to carry out a strategic assignment. The German Air Force was the creation of men who built largely on their experience in World War I and on the outgrowth of experiences gained in the Spanish Civil War. It proved itself tactically in the Polish, Norwegian, and Western Campaigns, where it was one of the decisive factors in victory. It suffered a tactical failure at Dunkerque, but the escape of the British forces there largely was due to Hitler's decision, against the advice of his generals, to throw his armored divisions against the disintegrating French Army rather than against the escaping British Expeditionary Corps. The real failure came when the Luftwaffe was asked to shift from its tactical missions to strategic operations against the British Isles of the type later carried out against Germany by the strategic air commands of the Allies.

Everything hinged on this operation. The basic Führer directives of the High Command (OKW) acknowledged that the outcome of the war would depend on Germany's ability to defeat her European enemies before the United States could seriously enter the picture. After the defeat of France, Great Britain was the last

enemy left in the field. Complete victory was possible only after an invasion, and in view of the strength of the British Navy, German troops could cross the Channel only after the defeat of the Royal Air Force (RAF) and a demoralization of the British armed services.

Strategic Errors

Yet for this task the Luftwaffe simply was inadequate. Peacetime planning was lacking for no well-armored heavy bomber of strategic range was available. The *Stuka* was no match for the *Spitfire*, yet the various types of *Heinkel, Dornier, Junker, Fokker, and Messerschmidt* could *have overwhelmed the small RAF by sheer numbers, if there had been enough of them;* they had to give up because there were not. Göring had decided early that a production of 500 planes a month was adequate to maintain the strength of his squadrons. Consequently no provision was made for rapid increase in production, and later on the experts concluded that no more could be built with the existing production facilities. How wrong they were was demonstrated in 1943 and 1944 when German industry produced at a rate of 40,000 planes per year, in spite of heavy Allied bombardments and a large-scale replacement of German labor by foreigners. By then there was a lack of capable pilots and trained ground crews and the combined American and British production outdistanced German efforts by far. In 1940 this could have turned the scale.

At the top level of strategy, the war was decided against the Axis, when Japan attacked the United States instead of the Soviet Union. For this fact Hitler bears an indirect responsibility because he always painted his situation in the rosiest colors for his allies, followed an opaque policy toward them, and failed to inform them of his plans and their progress.

Basic Order Number 24 of the OKW, dated 5 March 1941, described the desirability of Japanese action against British positions in the Far East, which was designed to defeat the British more quickly and thereby keep the United States out of the war. *Japan was to fight against America 'only if the entry of the United States into the war cannot be prevented.'* The Japanese nevertheless attacked Pearl Harbor and became engaged in a farflung Pacific campaign at a time when their aid against the Soviet Union was needed most desperately. Possibly they would have attacked Vladivostok instead of Pearl Harbor, if they had been told the true state of affairs instead of being given glowing accounts of German successes.

Even a limited offensive of the Japanese from their bases in Manchukuo and Sakhalin might have turned the tide on the German Eastern Front. The Soviet divisions that counterattacked at Moscow in 1941 and in the Caucasus in 1942 came from Siberia and would have remained in the Soviet Far Eastern Army if Japan had not permitted that group to be reduced to token strength by her inaction in Siberia.

Hitler's declaration of war on the United States 4 days after Pearl Harbor also hastened his defeat by at least a year. Top-level planning in the United States had always tended to favor a Pacific campaign before a European, and if Japan had attacked and Germany had not declared war, American action in the Pacific Theater would probably have preceded any commitments in Europe. Hitler

Germany's defeat was a direct result of her totalitarian form of government. The much-vaunted efficiency of dictatorship was a figment of the imagination and failed because of the human element involved

would thus have gained more time to concentrate on the Soviet Union and build his new jet planes and robot missiles.

Greatest Blunder

Perhaps the greatest blunder Hitler made was his decision with a series of tactical directives to upset the strategy of the Soviet Campaign of 1941, and with it, the entire war.

The OKW originally decided to seek the decision on the sector covered by Army Group Center under Field Marshal von Bock, who was supported by two armored groups under two of Germany's three foremost tank experts, Generals Hoth and Guderian. Army Groups North and South, under Field Marshals von Leeb and von Rundstedt, each were assigned one armored group. The advance in the south was slower than in the center, although the combination of Von Rundstedt in command and Von Kleist at the head of Armored Group I was among the best that Germany had. Moreover, Von Rundstedt began operations from southern Poland rather than farther south. The Hungarian and Romanian auxiliaries appear to have been held back deliberately along the Pruth River, so that during the early weeks of the campaign the Soviet southern army was outflanked and a gigantic trap prepared for it.

Hitler lost patience with the slowness of the advance on Kiev and ordered Guderian's Panzer corps and part of the strategic reserve of Army Group Center to come to Von Rundstedt's aid. The result was a magnificent encirclement and victory in the Battle of Kiev and an occupation of most of the Ukraine. In the meantime, the Soviet central group had from late July until early October 1941 to bring up reinforcements from Siberia and supplies from the Urals. By the time the armored forces on the central front were in action again, the 2 months most favorable for action there had been lost and the Soviets were ready for another test of strength. In spite of his subsequent victory at Vyazma, Hitler never was able to regain the weeks he lost—it was too late to capture Moscow.

If Hitler had intended to seek the decision in the south, he should have prompted the Romanians and Hungarians immediately to throw in everything they had near the Carpathian Mountains, given his Army Group South all available armor not needed elsewhere, and based it farther south to achieve a destruction of the Soviet southern group. If he intended the center to break the Soviet Army in two, he should have ignored temporary reversals elsewhere and insisted on the capture of Moscow before Kiev. His confusion of purpose lost the campaign.

Both in its conception and its execution the offensive against the Caucasus in 1942 bore a remarkable resemblance to the spring offensive of 1918 with which Ludendorff lost World War I. It started from a position of weakness rather than strength and was staggered in several phases, finally losing all purpose in a confusion of aims and bringing on a complete collapse.

After its several successful advances in 1942, the German Army could have taken Stalingrad and pushed on to Astrakhan or occupied the Caucasian oilfields; *it could not do both.* If a spectacular victory was sought and the need for oil was pressing, the Caucasus would seem to have offered the better goal; a breakthrough in the Caspian plains might have shown more generalship, ultimately yielded the Caucasus as well, and provided some analogy

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to the breakthrough at Sedan in 1940. *Hitler chose both and therefore achieved neither.*

Armored Group von Kleist was to crush the Soviet defenses and advance into the Caucasus with the aid of the Seventeenth Army. The advance was going well when the 4th Armored Group was unnecessarily diverted from its operations around Voronezh to help Von Kleist. In veering to the south the 4th Armored Group *bypassed Stalingrad which then lay undefended.* After the first goals in the Caucasus had been reached, Hitler decided to take Stalingrad. When the 4th Panzer Group turned north again, it found Stalingrad heavily protected. Gradually most of Von Kleist's motorized troops and all of his aerial support were withdrawn to take part in the siege of Stalingrad. The Soviets threw in more and more reinforcements from the Far Eastern Command. Thus the 1942 offensive achieved nothing and only laid bare a lengthened front to a Soviet counteroffensive. That expected disaster came as soon as they probed for and found the weak spots; it was the end of the German offensive capability.

These gross errors in logistics, strategy, and tactics were joined by the most incredible behavior of the National Socialist authorities toward the conquered peoples of eastern Europe. The success of the campaign was to depend in part on the outbreak of a political revolution in the Soviet Union as soon as her armies suffered their first defeats. Yet the Hitler Government did everything possible to prevent such a course of events.

A German invasion might have enlisted the support of the Estonians, Latvians, Lithuanians, Ukrainians, and other nation-

Failure of Japan to threaten Siberia permitted the Soviet Far Eastern Command to send vital divisions to counterattack at Moscow and Stalingrad. Shaded areas show German failure to select a single decisive objective—both chosen neither achieved.

alities dominated by the Great Russians who were only half the population ruled by the Kremlin. German reports from these areas indicated that the population in many districts was friendly and cooperative. Many nationals of these groups were actually used in supervisory capacities under the forced labor program, and an army of Russians sympathizing with the Germans under Generals Vlassov and Malyshin was organized and fought alongside the German troops against the partisans in the Balkans.

The large-scale executions of hostages in areas where Soviet partisans operated, the bestial methods of labor recruitment, the tactless behavior of the Nazi Party officials, and a progressive lack of discrimination between the various subject nations alienated most of the people. As a result, partisans arose everywhere, dominated all areas not physically occupied by German troops, and engaged an ever-growing proportion of the German Army.

Dr. Alfred Rosenberg, who presumably was in charge of occupied territories in the east, and his adherents had a plan for encouraging a *kulak* class in the liberated areas, sponsoring movements for independence among the subject nationalities, and exploiting the wealth of the East on a more rational, long-range basis. He soon started complaining that the Führer's directives backing him were ignored and that large numbers of petty tyrants were referring to Ukrainians as "colonials who should be whipped" or making other similar remarks and showing their contempt everywhere to the dismay and chagrin of the population. Wherever steps were taken to build up a positive attitude, more actions immediately followed to tear down the good impression.

Terrible treatment was meted out to prisoners of war and civilian laborers alike. Dr. Mansfeld, the German deputy general for mobilization of labor, on 20 February 1942, told the Reich Chamber of Economic Affairs that out of 3,900,000 Soviet prisoners only 1,100,000 were left, since the others had died as a result of malnutrition and harsh and unsanitary conditions. Such treatment seems inexcusable as it was generally unprovoked. Dr. Mansfeld took a firm stand against it and described the Russians as "very excellent workers," who "command good practical knowledge, work with precision and at a speed which cannot always be kept up by German laborers. . . ." Fritz Sauckel, the plenipotentiary general for manpower, in a report to the Führer on 27 July 1942, stated that "experiences in the employment of eastern workers have, on the whole, been satisfactory, both as regards their behavior and their output." It seems clear that the Russians and other Eastern peoples could easily have been persuaded to lend a tacit approval and give support to any system that could at least have offered a stern kind of justice. Propaganda Minister Dr. Joseph Goebbels on 29 April 1943 confided to his diary that:

General Vlassov wrote a report that rather grips one's heartstrings. One cannot but be astounded at the lack of political instinct in our Central Berlin Administration. If we were pursuing . . . a somewhat cleverer policy in the East, we would certainly be further along there than we are.

Having made these varied kinds of irrevocable mistakes, Hitler had a large share in softening up his war machine for the final assault against him. He did not stand a chance of winning once the tremendous resources of the Western democracies were mobilized against him. In view of the possibility of another war, it is a consoling thought that these resources include the inventiveness, discretion, and self-criticism that are associated with the freedom of Western democracy. They are qualities that always are lacking in a totalitarian system and which may once more let our cause triumph.

The Involuntary Night Withdrawal

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The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

ONE of the most difficult tactical operations is the withdrawal from action. The withdrawing force, normally outnumbered on the ground, at the mercy of enemy air, failing in morale, and short on matériel, is faced with almost insurmountable problems. To conduct operations successfully in the face of such odds requires the utmost in training, ingenuity, and leadership.

A study of modern wars shows that in most cases the United States forces or her allies were forced initially to conduct a retrograde action trading space for time in which to prepare. In the Philippines and in Korea the story was the same, and there is little reason to expect a different situation in any war of the future. For this reason it appears essential that our present doctrine, tactics, and techniques for conducting retrograde operations be reviewed in the light of experience and future developments.

As presently accepted, withdrawals are classified into two types—the daylight withdrawal and the night withdrawal. The first of these, the daylight withdrawal under enemy pressure, is avoided whenever possible because it permits the attacker to realize maximum benefit from his ground and air superiority and results in unacceptable casualties and confusion to the withdrawing force. The night withdrawal by stealth is the preferred maneuver. If at all possible a position is held through the daylight hours until nightfall. Then, using deception and secrecy, the defending forces silently fold their tents and steal away in the darkness to the next position. The night withdrawal by stealth has one major defect: its success depends upon the enemy relinquishing the offensive when night falls.

It is highly conceivable that in any war of the future, at least in the early stages, the enemy will have equal, if not superior, air support. This would mean that the enemy would not be held to his position during daylight, as was the case in Korea, but would, in fact, prefer daylight attacks. Thus daylight withdrawals similar to those we conducted in Korea under an air umbrella would not be feasible. Lacking air superiority, the night withdrawal by stealth would be the desired maneuver if it could be conducted successfully. It is dangerous, however, to operate under the delusion that the enemy will relax the pressure of his attack because of darkness. In fact, the opposite is more probable for the maintenance of constant pressure on a withdrawing opponent is almost universal doctrine. Accounts of the German 35th In-

It is essential that commanders and staff officers understand the tactics and techniques of the involuntary night withdrawal and that units be trained in the proper conduct of this type retrograde action

fantry Division's withdrawal operations between Moscow and Gzhatsk describe Soviet attacks as continuous and hard-pressing. In one withdrawal action the account reads: "Fortunately, the Russians abstained from further night attacks." The German commander explains that this was for a period of only part of one night.

The Japanese manual on tactics placed great stress on the necessity of continuing the attack vigorously, without letup, night and day. United States doctrine concerning the pursuit of a withdrawing enemy reads: "The attack of a withdrawing enemy must be pushed to the utmost limit of endurance of troops and equipment." Therefore, we must expect and plan for the enemy to continue the attack relentlessly night and day. If this is to be true, then a night withdrawal by stealth may not be possible and commanders must be prepared to conduct *involuntary* night withdrawals.

Current doctrine for conducting a night withdrawal under enemy pressure is rather sketchy and in general states: In the event the enemy detects the movement of forces trying to conduct a night withdrawal by stealth, it may be necessary to execute a withdrawal from action along the lines of a daylight withdrawal with necessary modifications imposed by the difficulty of control during periods of reduced visibility.

Two portions of this statement of doctrine deserve more attention. The first is:

In the event the enemy detects the movement of forces trying to conduct a night withdrawal by stealth, it may be necessary to execute a withdrawal from action along the lines of a daylight withdrawal.

This is a statement of desperation. Nothing but chaos can be expected if a unit attempting to conduct a night withdrawal by stealth is discovered and attacked by the enemy. The detachments left in contact (one-third of the frontline force) will be quickly overrun and destroyed; frontline units will be in the act of withdrawing; and the reserve will probably be en route to the general outpost line (GOPL) of the next rearward position, and thus not available to influence the action.

The phrase "with necessary modifications" also deserves consideration. The modifications required are of far more importance than this casual statement would lead the reader to believe. In addition, present doctrine does not list the "modifications" required.

The purpose of this article is to place the involuntary night withdrawal in true perspective with the standard daylight and night withdrawals and to set forth the tactics and techniques for the conduct of an involuntary night withdrawal.

A successful involuntary night withdrawal will depend primarily upon detailed prior planning, adequate control measures, and effective employment of the security force. In general, the tactics and techniques employed represent a combination of those employed in the daylight withdrawal under pressure and in the night withdrawal by stealth.

The involuntary night withdrawal is preferable to the involuntary daylight withdrawal. In both types the withdrawing force must back up fighting. In the involuntary night withdrawal the entire force will be afforded that amount of protection from enemy observation which

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is commensurate with the existent degree of darkness.

It is visualized that the withdrawal will be conducted as follows: units occupying the positions along the line of contact will fight their way back until they can disengage. Disengagement of these units may be facilitated by using local reserves to divert the enemy attack. Once disengagement is accomplished, units will move to selected local assembly areas and post security elements. Upon order or based on prearranged time schedules, these units will then move to the next rearward delaying position or designated assembly areas.

Security Force

The division reserve will occupy blocking positions along roads and other important lines of drift. The initial blocking positions will be along a line generally just in rear of the area in which frontline units are expected to disengage and in front of the assembly areas selected for the disengaged units. This security force assumes responsibility for the defense of the division zone at the earliest time thus providing the maximum time for the frontline units to assemble, reorganize, move to, and occupy the next rearward defensive position. The security force may fall back on a series of successive blocking positions either by reason of enemy pressure, by order, or by a prearranged time schedule. Whenever possible, however, the security force will withdraw to and occupy the GOPL in front of the next rearward defensive position.

Terrain

Terrain is a major consideration. First and most obvious, the withdrawing force has control over the area of withdrawal and is able to conduct detailed reconnaissance, assign routes and zones, provide route markers, establish multiple means of communications, select and prepare positions, and create or improve obstacles. Less obvious, but of equal importance, an analysis of the terrain permits the withdrawing force to determine the effect of terrain on the attacking force and to make plans accordingly.

Control

The attacking force will be able to coordinate and control offensive action closely against only that area which has been visible to his ground observation and subject to detailed reconnaissance. This will be the present defensive position of the force planning to withdraw. Once the attacker seizes the present defensive area, he has a choice of either continuing the attack over completely unfamiliar terrain, or halting, reorganizing, and then continuing the attack, or waiting until daylight. If the attacker attempts to continue the attack, he will quickly lose control of his forces. Because of unfamiliarity with the terrain the attacking troops will become confused and resort to following the natural lines of drift such as streams, valleys, roads, and open ridges.

The withdrawing force, by an analysis of the terrain, should be able to estimate the approximate depth to which the attacker can control a single phase of an offensive operation. Knowing this they can determine the general area in which the frontline units will be able to disengage. Having determined this general area, plans can be prepared, assembly areas selected, zones and routes allocated for the subsequent assembly and movement of the frontline units to the next defensive position, and the general line selected where responsibility for the zone can be transferred to the reserve.

Communications control during a night withdrawal under pressure will be extremely difficult. Planning must be highly centralized. The highest degree of coordination between units in contact and the reserve must be completed prior to the time the withdrawal begins. Clear lines of

responsibility must be established. Communications must be both extensive and extremely flexible. Passwords and other identification procedures must be prepared and disseminated with the utmost care.

Tactics and Techniques

To illustrate better the tactics and techniques involved in executing a successful involuntary night withdrawal, let us create a situation that makes such a withdrawal necessary. An infantry division with an armored cavalry regiment attached has the mission of covering the withdrawal of the other elements of a corps. Enemy ground forces have a superiority of approximately 5 to 1 and United States forces have lost control of the air.

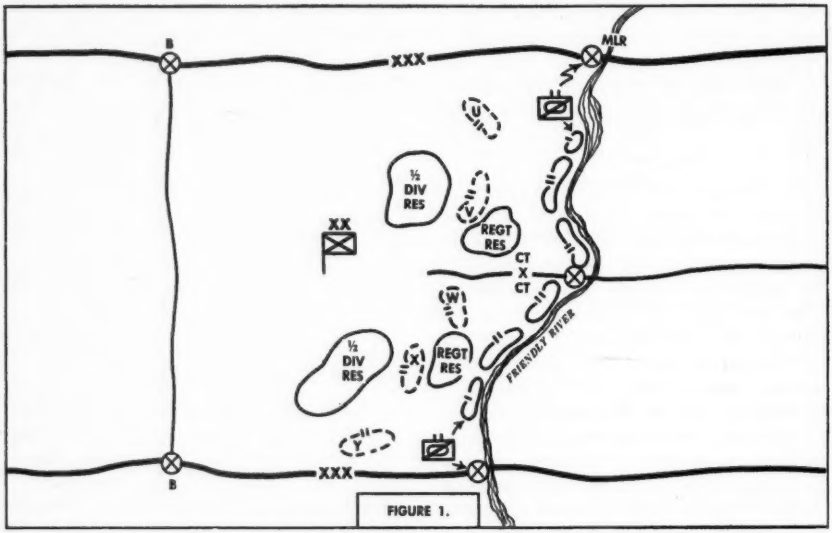

FIGURE 1.

This division is making a determined effort to delay a vastly superior enemy force. To accomplish this mission, the division has elected to defend on a series of delaying positions to achieve the maximum delay possible without becoming decisively engaged. The enemy, having superior forces and knowing what is planned, will attempt to destroy the division as rapidly as possible in order to strike the main force of the corps before defensive preparations can be completed.

The division has occupied the first delaying position just west of Friendly River and is disposed as shown in Figure 1. The positions U, V, W, X, and Y are prepared but unoccupied blocking positions. The division reserve has been divided because of the size of the reserve and the width of the zone. Line B-B is the next rearward delaying position.

Plans for the involuntary withdrawal are based on the assumption that continued defense of the present position is impractical and that enemy action will not permit a night withdrawal by stealth. When enemy pressure reaches the point where an involuntary night withdrawal is required, all units in contact will begin to withdraw simultaneously. This does not mean that everyone picks up and moves to the rear. It means that larger units, regiments and battalions, will receive orders

to execute the withdrawal. Elements within the major units will withdraw according to unit plans. It can be seen that the task of disengaging will vary considerably among the units in contact, depending on the extent and location of enemy pressure at the time of the withdrawal.

Preparation of the plan should begin with an analysis of the terrain. Although Figure 1 does not show the vegetation, relief, roads, and streams, certain assumptions can be made from the location of the positions. The frontline positions, just west of Friendly River, are on high ground which is under enemy ground observation. It is against this ground that the enemy can be expected to successfully coordinate and control a night attack. The terrain between the frontline positions and the blocking positions U, V, W, X, and Y is low, and there are streams and scattered patches of woods in the area. If the enemy continues the attack, it is in this area that his force will begin to lose control and withdrawing friendly frontline units will be able to disengage. Normally the blocking positions U, V, W, X, and Y also will be on high ground although the elevation often may not be as high as that in the area of the present frontline positions. Somewhere just behind these blocking positions, assembly areas for the frontline units will be selected. The area in which the division reserve will relieve the frontline units and assume responsibility for the defense of the division zone will be along a line generally just in front of the line of positions U, V, W, X, and Y. Phase line Green (Figure 2) is used to mark this general area. Detailed plans, location of positions, routes, signs, countersigns, and communications will be arranged between the commanders concerned.

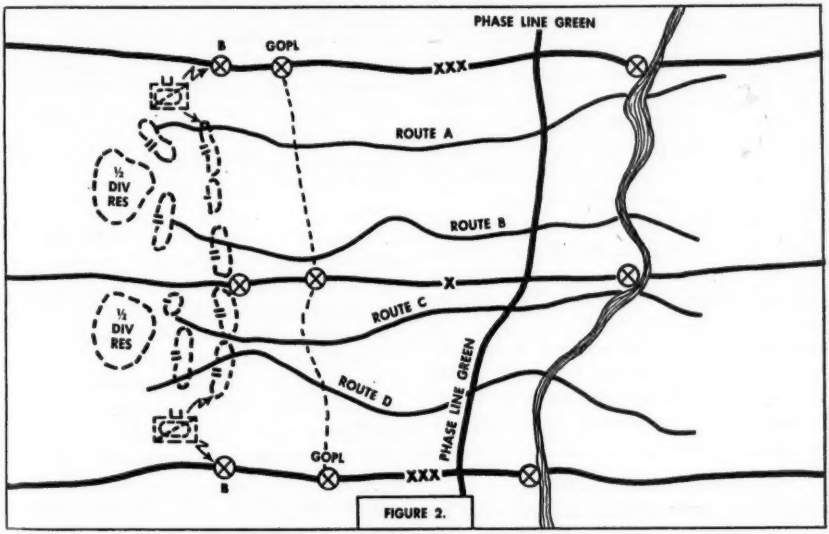

FIGURE 2.

In Figure 2 both zones and routes are assigned to the withdrawing units. Zones are assigned because certain elements will require complete freedom of the area to disengage and to execute their withdrawal successfully to the next rearward defensive position. Routes are assigned to facilitate the movement of reserves, trains,

artillery, and frontline units once disengagement has been accomplished.

The GOPL

A general outpost line (GOPL) is established for the next rearward position and the division reserve prepares plans for withdrawing to and occupying this security position. If the division reserve is heavily engaged, however, it may not be able to occupy the GOPL and be forced to continue the withdrawal back through the next rearward position. In this case the GOPL would not be occupied since it is not considered sound to require elements of the frontline units to occupy the GOPL. It is imperative that these units go back and occupy the next rearward delaying position with the maximum strength.

Figure 2 contains the information that would be required on an overlay accompanying the operations plan for the involuntary night withdrawal. The written portion of this plan would follow the standard format. The contents would contain specific instructions as to execution, unit responsibilities, attachments, priority on routes, fire support, and coordinating instructions.

Other Considerations

The wide frontage that a division is required to occupy in a delaying action will necessitate dispersing the bulk of the delaying forces rather thinly along the front. The extensive area available permits maximum dispersion of the reserve. Thus the very nature of the operation provides inherent defense against the enemy use of atomics. In order to penetrate the defenses quickly, the enemy might concentrate his forces and thus present lucrative targets for our use of atomic weapons. Atomic weapons may also be used advantageously to assist in the disengagement by disrupting enemy forces and by causing temporary night blindness. Use of an atomic weapon might well be the signal to begin withdrawal.

Artificial illumination is another important consideration. Its effective use by the enemy might permit the conduct of a controlled enemy offensive well beyond phase line Green. This would necessitate frontline units continuing to fight as they withdraw, possibly all the way to the next rearward position. In such a case, it would be advisable to have the reserves immediately move to and occupy the GOPL of the next rearward position.

Use of artificial illumination in rear areas of friendly forces would facilitate assembly and movement of units to the rear. Care, of course, would be required to prevent illuminating the forward areas, thus denying the reserve and frontline units the advantage of the cover of darkness.

The use of smoke can be an effective countermeasure against the enemy's use of artificial illumination. If the enemy has habitually used artificial illumination, then plans should be made to use smoke to cover the withdrawal.

In order to further emphasize the key considerations for the conduct of the involuntary night withdrawal, let us compare it with the other two types of withdrawal. How does the involuntary night withdrawal differ from the daylight withdrawal under pressure and the night withdrawal by stealth?

The daylight withdrawal is similar to the involuntary night withdrawal but considerably more difficult. The night withdrawal by stealth is dependent on secrecy and deception for success. Detachments are left in contact to maintain the appearance of normalcy while the bulk of the force assembles and moves back. In an involuntary night withdrawal units must fight their way back until they can disengage. Detachments cannot be left in contact; they would be quickly overrun or destroyed.

In the voluntary night withdrawal the use of routes rather than zones in rear of

the troop assembly areas is not uncommon. In the involuntary night withdrawal and the daylight withdrawal both routes and zones are assigned.

In a night withdrawal by stealth the primary mission of the reserve is to occupy the GOPL of the next rearward position. In the involuntary night withdrawal the reserve moves forward to assist the withdrawal of frontline units but normally does not counterattack. In a daylight withdrawal the reserve may occupy flanking positions and it is not unusual for the reserve to counterattack. The reserve usually will not occupy the GOPL of the next rearward position in a daylight withdrawal.

Planning in preparation for an involuntary night withdrawal must be complete. Commanders must conduct a complete reconnaissance of the zone in which they will fight while backing up. Artillery surveys and on call fires are prepared in great detail to permit delivery of fires throughout the zone without the aid of observation.

Conclusions

It is apparent that the foregoing cannot be considered as "modifications." Rather, the involuntary night withdrawal should be considered of equal, if not greater, importance than the daylight withdrawal or the night withdrawal by stealth. A commander faced with an aggressive enemy may not be able to afford the risk involved in a night withdrawal by stealth; neither will he prefer to conduct a daylight withdrawal. The operation which will afford the greatest security and have the best chance of success is the involuntary night withdrawal. In any war of the future it will be essential that commanders and staff officers understand the tactics and techniques of the involuntary night withdrawal and that all units be trained in the proper conduct of this specialized type of retrograde action.

In our planning we must anticipate that an enemy will have the capability to employ against us the weapons we can use against him. So we, ourselves, must be prepared to operate on the battlefield under this threat. Since, in the employment of any weapon, a suitable target is an important requirement, dispersion will be more pronounced than ever before and units will be more widely separated, one from another.

This dispersion will be accomplished by greater depth from front to rear in addition to lateral dispersion.

Small unit actions will become more typical, and decentralization of control more pronounced.

The small unit leaders—the younger officers and the noncommissioned officers—will be called upon to a greater degree than ever before to make tactical decisions upon the battlefield. Modern combat thus places ever greater reliance upon the individual and especially on the leadership qualities of younger officers and noncommissioned officers.

General Matthew B. Ridgway, Retired

A POST-KOREA LOOK AT THE GENEVA CONVENTION

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The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

THE author became interested in the prisoner of war issue during the period 1951-54 when he was assigned to duty with Psychological Warfare in the Far East: First, psywar was concerned with the development of surrender appeals designed to bring about the surrender or defection of Communist soldiers; second, it had a staff interest in the program of "education and information" then being conducted for Chinese and Korean prisoners of war in United Nations custody; and lastly, it had considerable responsibility in connection with the "explanation program" envisioned under the armistice agreement for those prisoners who did not wish to return to their countries of origin.

During the period of active military operations, psywar refrained from promising the Chinese or North Koreans immunity from repatriation at the end of hostilities. This restriction, based on a determination to adhere scrupulously to the Geneva Convention of 1949, sacrificed what some felt might have been a potent surrender appeal. While our appeals guaranteed good treatment, we administered the vast numbers of North Koreans and Chinese in our hands—including those who declared themselves opposed to repatriation—as prisoners of war, thus submitting them to extended captivity and denying to ourselves a source of manpower. On the contrary, we found it necessary to devote considerable manpower and logistical effort to the control even of those prisoners of war who did not wish to return to Communist rule. The incongruity of treating as prisoners of war persons who, ideologically, openly defied their former Communist masters, became evident to me while, as a United Nations Command "observer" during the "explanations" of fall 1953, I watched them inflict on communism one of the most telling propaganda defeats of the entire conflict.

The foregoing considerations prompted me to study the extent to which the 1949 Geneva Convention was, in effect, applicable to personnel captured in the Korean conflict. My research led to the conclusion that, while individuals who surrendered on the battlefield under military pressure must undoubtedly be treated as prisoners of war in the traditional sense, the category of those who defected to seek political asylum in the free world falls outside the scope of the Convention.

This article, which is based on military and legal aspects of the problem, represents an effort to substantiate the above conclusion and to recommend a course of action which might, in the event of future hostilities, be applied to greater advantage.

With the spectacular settlement of the prisoner of war issue at the end of the Korean conflict, a new concept made its appearance in the rules of warfare: the

principle of nonforcible repatriation. This concept implies that prisoners of war, at the termination of hostilities, shall not be returned to their own country if, upon the exercise of free choice, they have reached the decision that they do not desire to return home but seek political asylum elsewhere.

Immediately following the Korean prisoner settlement, the world was presented with conflicting comments on the principle of nonforcible repatriation. With their usual disregard for facts, the Communists branded the concept as an evil scheme of their opponents. India's Lieutenant General Thimayya, on completion of his mission as Chairman of the Neutral Nations Repatriation Commission (NNRC), expressed the view that this concept would offer soldiers the opportunity to rationalize acts of cowardice on the battlefield on ideological grounds. United States and United Nations statements hailed the application of the principle as a triumph of the ideals of the free world. The Swiss delegate to the NNRC recommended that a conference be convened to rewrite the Geneva Convention so as to give recognition to the principle of voluntary repatriation.

An examination of the Korean conflict from the viewpoint of international law, particularly the Geneva Convention of 1949, shows that its legal character does not remit a clear-cut definition. Obviously, it was not intended by the powers who intervened in it to be regarded as declared war in the conventional meaning of the term. One view advanced to define the nature of the Korean conflict calls it "enforcement action," as described in Chapter VII of the United Nations Charter. Military operations in response to a decision of the United Nations Security Council are novel in international law and, therefore, little has been written about them. It has been held consonant with the dignity and purpose of the collective enforcement of the Charter that it would rank in a category different from war as traditionally understood in international law: For whereas the objective of traditional war is to enforce the interest of an individual state, the collective enforcement action under the Charter may be likened to law enforcement action against a domestic law breaker. The term "police action" given to the Korean conflict would find justification in this opinion.

Civil Not International War

Prior to the enactment of the United Nations Charter, international law knew "civil wars" and "wars of an international character." Article 3 of the 1949 Geneva Convention on Prisoners of War speaks of these two categories. In a civil war, both parties, the "established" as well as the "rebel" governments, must qualify as belligerents, in order to merit recognition by foreign powers of their right to commit acts of war affecting interests of nations not involved in the conflict. Recognition of the status of belligerency is normally granted where the insurgents have a political organization sufficient to constitute a state, their military forces observe the rules of international law, and where they actually exercise the rights of belligerency —that of blockade. Controversy exists in some quarters as to the effect on the character of civil war caused by the intervention of foreign troops on the side of either or both belligerents, although the United

The continued use of the right of political asylum, if properly implemented in the event of future hostilities, will enable the free world to accelerate the disintegration of Communist forces everywhere

States position taken at the diplomatic conference of Geneva in 1949, citing the Spanish conflict as an example of a civil war, would indicate that no such issue existed in the view of the United States Government.

Manifestations by the belligerents at the outset of the Korean conflict encouraged the belief that they held it to be a "conflict not of an international character." Dean Acheson, then United States Secretary of State, in a message of 5 July 1950 to the International Committee of the Red Cross pledging United States adherence to the humanitarian principles of the Geneva Convention, singled out Article 3. It appears that Article 3, as the history of its enactment demonstrates, was intended by the signatories of the Convention to set forth the minimum standards governing the treatment of prisoners of war which must be maintained in any armed conflict, even one "not of an international character." The provisions of this Article may be regarded as an authoritative restatement of substantive international law on this subject; repatriation at the close of hostilities is not found among them. The announcement by General Douglas MacArthur that armed forces under his control would treat their prisoners in accordance with the "humanitarian principles" recognized by civilized nations involved in an armed conflict, as well as the message of the Foreign Minister of North Korea to the United Nations Secretary General, stating that North Korean Forces would observe the "principles" of the Geneva Convention, falling short of a declaration of unequivocal adherence to the Convention, are evidence of the declared intention of the belligerents to be bound only by the substantive requirements of settled international law, and not necessarily by the procedural rules contained in the Geneva Convention.

Regardless of the ultimate classification of the Korean conflict by future scholars as "enforcement action" or "war not of an international character," a common denominator reconciling both views might define it as an armed conflict falling short of declared war. Nevertheless, it conferred the status of belligerency upon its parties and required from them the observation of the substantive rules of warfare as accepted by international law.

The problems of reconciling the principle of nonforcible repatriation with the terms of the Geneva Convention on Prisoners of War occupied the armistice negotiators from early 1952 up to the final conclusion of the agreement in July 1953. The final solution adopted by the parties to the conflict was based on a special agreement between belligerents, neither of whom had pledged to adhere to more than the essential substantive provisions of the Convention. The problem of reconciling the principle of nonforcible repatriation with the terms of the Convention, therefore, was not unequivocally solved.

An examination of the appropriate provisions of the Convention reveals the difficulties of reconciling it with the principle of nonforcible repatriation sought by the United Nations side. Article 4 of the Convention, in defining prisoners of war, speaks of persons belonging to one of several listed categories of combatants or other groups "who have *fallen into the power* of the enemy." The novelty of the asylum-seeking prisoner of war problem is borne out by the fact that most legal au-

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thorities fail to discuss the significance of the factual circumstances surrounding an individual's capture for his status as a prisoner of war.

Connotes Submission

Two of the United States negotiators of the present Convention, in referring to Article 4, speak of "traditional prisoners of war" but do not define the meaning of the term. In the view of this author, "falling into the hands of the enemy" signifies a situation wherein an individual, a member of one of the categories enumerated in Article 4 of the Convention, feels compelled to accept capture by the opposing side because of physical or psychological factors which prompt him to cease resistance and seek the mercy of the enemy. However, this individual has thereby not ceased to regard himself as a member of his own side, continues to identify himself with its objectives, and would, were it not for the factors dictating his surrender, continue to fight. "Falling into the hands of the enemy," therefore, connotes submission, implying circumstances beyond the control of the individual; only in this sense is it appropriate to speak of "traditional prisoners of war."

A different situation would arise where an individual, who for political or ideological reasons does not identify himself with the belligerent which brought him on the battlefield, finds himself in a tactical situation which permits him to free himself from the undesired affiliation with that belligerent and to seek asylum from the opposing side. Such individual has not been compelled to surrender by factors beyond his control; he merely accepted an opportunity to sever his ties with an unwanted cause. A fine, but nonetheless valid, line distinguishes this individual from a deserter who defects from his side for reasons of cowardice or other criminal motives. The latter continues to regard himself as a subject of his own belligerent

Chinese Communist Forces captives receiving instructions on camp duties and details while those in background are engaging in calisthenics.—Department of Defense photo.

and merely evades his obligation of service to that side, whereas the former manifestly declares that he will have nothing to do with the belligerent from whom he escaped. For this reason, the power extending asylum to individuals so requesting it is in no wise bound to treat them as persons "falling in its hands" as contemplated by Article 4 of the Convention.

Once a person has been classified as a prisoner of war in the contemplation of Article 4 of the Convention, the protection of the Convention extends to him and Article 8 prohibits his renunciation of this protection. In the absence of a special agreement by the belligerents, such as was concluded at the end of the Korean conflict, he must be repatriated as required by Article 118 at the close of hostilities. An individual granted asylum, however, is outside the scope of the Convention and no obligation exists to effect his repatriation at any time. Such an individual should, therefore, never be classified as a prisoner of war from the time of his arrival in friendly lines.

The Indian Resolution

The factual analysis described was not immediately applied by the United Nations Command at the outbreak of the Korean conflict. Initially the "custodial" concept prevailed, under which all persons in United Nations custody who had been members of the opposing forces were regarded as prisoners of war and treated in accordance with the provisions of the Convention, regardless of the individual circumstances of their capture. Recognition of the existence of strong anti-Communist feelings in a large segment of the prisoners soon caused the United Nations Command to realize its obligation to grant asylum to this group and, therefore, to seek recognition of the principle of nonforcible repatriation in the Armistice Agreement. This position of the United Nations Command was rejected by the Communist side and led to stalemated negotiations for over 18 months, necessitating continued hostilities and causing many casualties. The Indian Resolution adopted by the United Nations General Assembly offered a formula giving virtual recognition to the principle of nonforcible repatriation, clothed in the face-saving term of "nondirect repatriation." Although ostensibly rejected by the Communists, the Indian Resolution formed the basis of the ultimate Armistice Agreement.

As contained in the Armistice Agreement, the application of the principle of nonforcible repatriation of prisoners of war provided for a procedure in three phases. The first phase brought the prisoners rejecting "direct repatriation" under the neutral control of the Custodial Forces, India. The second phase gave both parties to the conflict the opportunity to offer "explanations" to the prisoners held by the Custodial Forces, India, as to their status, rights, and immunities in the event they would elect to return to their countries of origin. The last phase contemplated the release of those prisoners who had at the end of the explanation period persisted in their rejection of the direct repatriation and their move to a neutral country.

A discussion of the relative merits of the repatriation procedures contemplated by the Geneva Convention and the Korean Armistice in the light of military requirements in a war between belligerents of fundamentally opposing ideologies shows the shortcomings of either formula.

Article 118

The Geneva Convention seems to recognize the principle of nonforcible repatriation during, but not on termination of, hostilities. However, the provision contained in Article 109 of the Convention prohibiting repatriation of sick and wounded individuals against their will appears intended for persons fearing for the ef-

fect on their health by the arduous process of repatriation during hostilities or by return to a wartorn country devoid of adequate medical facilities. It is, therefore, not considered as an embodiment in the Convention of the principle of asylum. As previously discussed, Article 118 unequivocally demands the release and repatriation of all prisoners of war held by either belligerent at the termination of hostilities. This flat requirement of repatriation of all prisoners would offer a belligerent maximum expectancy, in theory, for the return of its own personnel from captivity at the end of hostilities. While this may have been a strong factor leading to the enactment of Article 118, experience has shown that Communist countries do not live up to obligations assumed under this Article of the Convention.

From the viewpoint of the enemy seeking asylum, the requirement of repatriation of all prisoners at the end of hostilities would be acceptable to anti-Communists who were forced to serve in the Communist armies and had become prisoners of war, only in the event of total defeat of the Communist side. Only in such a case would the prospect of return to their homeland liberated from Communist oppression remove all their fears of reprisal.

A serious disadvantage from the aspect of psychological warfare is that the psychological incentive for defection from the Communist side under the promise of unequivocal protection against forcible repatriation cannot be invoked as long as it is considered that Article 118 of the Convention will compel eventual repatriation.

A Korean civilian instructor lecturing to a class of captives on the mission of the United Nations at a prisoner of war camp in Korea.—Department of Defense photo.

Another disadvantage created by the provisions of the Geneva Convention is the impossibility of utilizing prisoner of war manpower during hostilities, a requirement so essential in a war against Communist countries possessing numerical superiority over the free world.

Under the precedent created by the Korean Armistice Agreement, on the other

hand, some psychological incentive is offered for the defection of unwilling members of the Communist forces. This advantage appears outweighed, psychologically, by the prospect of long internment coupled with uncertainty of ultimate disposition and, at best, an unattractive neutral custody and undesirable "explanation" procedure. From a military point of view, the Korean armistice formula fails to offer the opportunity of utilizing prisoner of war manpower and instead ties up the manpower of the capturing belligerent. It must be emphasized, however, that the Korean Armistice Agreement has no binding force beyond the parties thereto and the conflict which it terminated.

To avoid the above disadvantages of the Geneva Convention and Korean armistice formulae, and to meet the military requirements of a psychological defection incentive and utilization of prisoner of war manpower, a different approach is recommended for the handling of the prisoner of war problem in the event of a future conflict with a Communist power. Under this proposed course, national policy should declare that only those individuals who are captured in the "traditional sense" will be considered and classified as prisoners of war. Persons seeking asylum (the term defectors should be replaced by one lacking the stigma attaching to desertion) are not "falling into the hands of the enemy," therefore, Article 4 of the 1949 Convention does not apply and they never acquire prisoner of war status.

Ample precedents exist in recent history for the nonclassification as prisoners of war of individuals changing sides in a conflict. A few examples are the Czech prisoners of World War I, the French offering initial resistance to Allied landings in Africa during World War II, and the Chinese Nationalists pressed into Chinese Communist Forces in 1948-49. If a government in exile were recognized by the anti-Communist High Command, an additional psychological factor would arise replacing the stigma of desertion with the patriotic epithets of "escaping from oppression" and "joining the forces of liberation."

Conclusions

To remove any doubts as to the freedom of choice exercised by those persons stated to be seeking asylum, and to exclude the possibility of harboring in that category individuals who retain loyalty to the Communist regime and who, therefore, should be regarded as prisoners of war, a screening process should be instituted where those found in the latter category would be discovered and transferred to prisoner of war status. In this case, Article 5 of the Geneva Convention, prescribing that prisoner of war status attach from the moment of surrender, would apply retroactively.

To maintain the high standards of equitable treatment of individuals advocated by the free world, all former Communist soldiers seeking asylum should be brought before a board of "explainers" who would outline the consequences of their actions to them and give those not desiring to face such consequences the opportunity to request transfer to retroactive prisoner of war status. The operations of this board should be observed or even participated in by delegates of the protecting power. Persons completing the explanation process without requesting transfer to prisoner of war status should then be utilized as cobelligerent manpower.

The development of international law in the light of the changing requirements of the ideological conflicts of our present age is extremely slow. However, the introduction of the right of asylum in the Korean Armistice Agreement has signified a milestone in this development which will, if properly implemented in the event of future conflicts, enable the free world to accelerate the disintegration of Communist forces everywhere.

The Defense of Asia

Deputy Under Secretary of State Robert D. Murphy

This article is reprinted from THE DEPARTMENT OF STATE BULLETIN, Volume XXXI, Number 805.

The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

SINCE the days of the clipper ships, Americans engaged in foreign trade have always had a tremendous interest in, and close association with, the Far East.

In a brief survey there are three aspects which demand our most urgent attention at the present time.

First.—Communist China's part in the increasing pressures on free Asian nations.

Second.—Factors which make free Asian nations particularly vulnerable to such pressures.

Third.—What the free Asian nations and their Western friends are doing—and can do—to render these pressures ineffective.

It will be helpful, I believe, to begin with an appraisal of the continuing effects upon surrounding Asian countries of the Communist conquest of China. This conquest of China has involved far more than the disappearance behind the bamboo curtain of a population which the Communists estimated at over 580 million. It has brought other dangers than those inherent in this vast increase of manpower that now can be ruthlessly expended in Communist aggression against the free countries of Asia.

Among the most significant and menacing results for the free Asian countries is the fact that the fall of China has provided the Communist movements throughout Asia, for the first time, with a firm Asian base.

Prior to World War II, Asian Communist groups outside of China were isolated and fragmented and were sponsored and supported in different ways. The Communist groups in Indonesia and India, and to a certain extent in Indochina, had their inception through the proselytizing efforts of mother parties in Europe. Those groups in Japan and Korea were founded directly by the Comintern; those in Malaya, Thailand, and the Philippines were founded or largely supported from China or from the Chinese colonies abroad. The Communists in Burma were divided into various competing factions which grew out of resistance coalitions developed during the war and had little firm direction from any quarter.

Because the Kremlin was too remote to provide effective coordination and direction, the leadership of these local Far Eastern parties often struck out on their own tangents in order to ensure the survival of local Communist movements. It was natural, therefore, that the Asian Communist movement was marked by factionalism, dissidence, and the problem of

We must seek to promote abroad, awareness of the fact that we are taking positive steps to aid in overcoming the problems of the free world nations of the Far East, formidable as these problems may be

leadership. The parties had to rely on their own meager resources and sense of dedicated fanaticism, for significant external aid was not available. They were, therefore, capable of only limited political and subversive objectives of sabotage and harassment against reasonably stable administrative authority.

Into this chaotic situation the Chinese Communists have moved to provide, for the first time, firm regional direction and increased control over the lesser Communist Parties in Asia. Their new and readily accessible Asian base provides objectives, techniques, discipline, and the aggressive intention to translate Communist potentialities into actualities.

This Communist consolidation of a tremendous Asian base on the Chinese mainland has altered the power and influence of communism in each country of the region. No longer can each of the non-Communist East Asian countries easily manage its own problem of Communist subversion and bring its disloyal and subversive forces under control or to extinction. That was tragically demonstrated in Indochina. Each of the free Asian countries is now vulnerable in some degree to the expansion of Communist power and influence.

Moreover, just as the Soviet Union provided a protecting flank to Communist groups operating in China, so Communist China can now provide a protecting flank to Communist groups operating in Burma, Thailand, Vietnam, Laos, and Cambodia. In addition, since all of the free Asian countries are directly touched by Communist China in one or more ways, there are many channels through which the Communist influence can now be spread.

The tactics used by the Chinese Communists in assaulting free Asian countries are infinitely varied, ranging from direct Chinese Communist armed aggression with Soviet support and direction, as in Korea, to lavish exhibits at foreign fairs and widespread participation in foreign cultural events and sporting matches.

For what reasons are the free Asian countries vulnerable to the Communist pressures which I have just described? There are many reasons, but I should like to single out and discuss briefly two reasons of major importance: first, the attitude of neutralism which prevails in much of the area; and second, the general economic condition of the free Asian countries.

When we speak of neutralism in the Far East, we are using a vague term to cover a variety of mental and emotional attitudes. Neutralism appears to be woven of several strands of political opinion which, while present to a greater extent in some free Asian countries than others, are prevalent throughout the entire area. They include:

1. A tendency to underestimate the Communist threat.

2. A distrust of the motives of the Western Nations.

3. A fear of involvement in war and fear of offending neighboring Communist regimes, among other things.

Vulnerable as they are to Communist political and military pressures, the free Asian nations are, in the opinion of many experienced observers of the situation, even more vulnerable to Communist exploitation of real and alleged grievances of an economic nature—and of the political instability which usually accompanies economic instability. All of these free Asian

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countries, with the single exception of Japan, are underdeveloped countries, with the great bulk of the population earning their meager living at a great cost in effort on a tiny plot of land which they own, or rent, or cultivate for a landowner. Japan herself faces similar problems, and, although she is industrially developed, she also suffers because other Asian countries which need her machine products, technical skills, and wide variety of consumer goods are unable to purchase them in sufficient quantities.

As you well know, an underdeveloped country is one in which resources, both material and human, are not being used as fully as modern technology permits. In human terms this means that the inhabitants of such countries in Asia, on an average, have a life expectancy of only about half of that of people of highly developed countries. Their incomes average less than $200 per year per person—in many countries considerably less than $100—with all that this implies in terms of hunger, deprivation, and discomfort. There is a shortage of medical services, and health conditions are below standard. Their food supply is about a third less than that of developed countries. The opportunity to attend school is limited to a small minority. Only one person in four knows how to read and write. The supply of clothing and household furnishings is about one-fourth that of persons in developed countries.

Stated most simply, the basic economic problem of these areas is that per capita income is too low to enable the average Asian to acquire the minimum goods essential to sustain life and leave adequate savings. Such savings are essential to generate sufficient capital for investment purposes if economic progress is to be achieved.

This is true whether it is merely a question of the individual farmer buying fertilizer to increase his crop, or an enterpriser pooling the savings of many farmers and other workers to build a fertilizer plant. The problem is further complicated by the fact that underdeveloped countries have rapidly increasing populations.

Therefore, the growing of food and raw material requirements for the economic development in the Far East will have to be obtained by the more effective utilization of existing physical resources. Better technology can assist importantly, but this will require larger investments in capital per worker. This means that a substantial amount of savings and investment is constantly necessary just in order to prevent a deterioration of the economy and a decrease in the standard of living. An even higher rate of saving and investment is necessary if the economy is to expand and improve.

South and Southeast Asian economies generally lack an adequate number of the type of businessmen who are capable of mobilizing savings for use in innovating commercial and industrial enterprises and agrarian improvements essential to economic progress. Governments in this region have sought in many ways to substitute for the shortcomings in the private enterprise sector, but the results of both private and governmental endeavor generally have not been adequate to provide higher living standards, or even, in some cases, to prevent stagnation or to arrest decline.

The resulting poverty, hunger, disease, and lack of opportunity for personal self-development are not new problems, for they have been characteristic for centuries of the large underdeveloped parts of the Far East. What makes this so important today is that it has become a source of active political unrest.

The Communists seek to exploit these economic difficulties and gain converts by propaganda which paints a glowing picture of economic achievement in China and the Soviet Union. Communist propaganda used in the underdeveloped countries also concentrates upon the agitation of eco-

nomic grievances, particularly those of agrarian workers against landlords and government. The Chinese Communists are especially expert at this, for the skillful manipulation of agrarian grievances and the use of rural military bases were weapons which they used to bring about the fall of China.

Now, to what do these factors favoring communism in the Far East add up? Will the Communists succeed in disrupting and dividing more countries as they have done in Korea and in Indochina? However optimistic we may be, there is a long-run danger that if these various Communist pressures are allowed to make headway, if nothing is done to ameliorate the causes of widespread local complaint and dissatisfaction, some of the non-Communist Governments may decline in strength and cohesion.

The free Asian nations have already taken substantial internal measures, with varying degrees of success, to halt or curb Communist subversive action within their borders and to do what could be done to curtail the effectiveness of Communist pressures from outside sources.

There are many other things that have already been done. The United States, as you know, has mutual security pacts with Japan, Korea, and the Philippines and has pledged that her forces will defend Formosa and the Pescadores. The United States has been providing economic aid or military assistance or both to many of the free Asian countries. The Export-Import Bank and the International Bank for Reconstruction and Development have made significant contributions to economic development and trade expansion in the area.

Another very important step already taken to improve the economic stability of the area is embodied in the Colombo Plan. The Colombo Plan was conceived initially in 1950 as an organization to focus attention on the economic development problems of the countries of South and Southeast Asia. It was designed to provide a framework within which international cooperative efforts can be made to promote sound and enduring progress in the area. To its original members—Great Britain, Canada, Australia, New Zealand, India, Pakistan, Ceylon, Malaya, and British Borneo—other countries have now been added. The United States became a full member in 1951, and Burma, Nepal, Cambodia, Laos, Vietnam, Indonesia, Japan, Thailand, and the Philippines have also joined, the last three only recently.

The Colombo Plan is actually a committee—a consultative committee for economic development in South and Southeast Asia. To this committee, important nations of the area discuss and analyze the preparation and implementation of their individual plans for economic development, including financial requirements for carrying out the plans. Although there is a loose line of distinction between so-called contributing countries and recipient countries, all of the members are gradually becoming contributing countries—to one another.

The United States and other free world countries are also taking steps in the realm of international trade which should, if successful, serve to stabilize the economies of free Asian nations, including Japan.

On 30 March 1954, in carrying out the recommendation contained in the Randall Commission report that the trade policies of our country be liberalized, the President sent a message to Congress recommending a gradual and selective revision of our tariffs, through the tested method of negotiations with other nations. He expressed the belief that the United States should offer needed leadership in the reduction of trade and payments barriers that limit markets for our goods throughout the world.

In the same message the President said,

"I may also recommend special provisions for negotiation with Japan in view of the economic problems of that country."

The economic situation in Japan, which was so ably discussed by Assistant Secretary of Commerce Anderson, is quite different from that in the underdeveloped Asian countries, and that is why the President made this special reference to Japan in his message. Virtually devoid of exportable material resources and dependent upon imports for 20 percent of her food—and most of her industrial raw materials—Japan must trade to live. Notwithstanding a high level of United States expenditures, Japan last year incurred a deficit in her foreign payments of 200 million dollars. The critical problem revolves about the fact that Japan must somehow find markets to increase her exports by at least 75 percent to compensate for the further decline in our expenditures as United States forces are withdrawn from the area.

The United States has been supplying about one-third of Japan's imports but buying from Japan only one-third as much as she sells to Japan. Recently, we announced our intention to enter into multilateral negotiations under the General Agreement on Tariffs and Trade with the primary purpose of expanding Japan's trading opportunities with the United States and other countries. The United States is taking the lead in this matter in recognition not only of the importance of trade between the United States and Japan, but also of the necessity of United States leadership if other countries are to do their share in helping Japan to increase her trade. The enlargement of Japanese trade opportunities within the free world is of special importance also as a means of reducing undue Japanese reliance upon Communist Chinese markets with all the risks, both economic and political, which might follow from such reliance. By fostering economic stability in Japan, we can help to retain on the free world's side the great industrial strength and technical skills of Japan which are so vital to the defense of Asia.

Still another development of momentous significance exists in the Manila Pact and Pacific Charter, which were signed at Manila on 8 September 1954 by eight free nations. The accomplishments at Manila did much to overcome various misunderstandings on the part of free Asian nations and provided vital assurances that the Communist threat to the area, either through armed aggression or subversion, would be effectively met. In the Pacific Charter the signatories pledged themselves to uphold the principle of equal rights and self-determination of peoples, to strive earnestly by every peaceful means to promote self-government, and to secure the independence of countries whose people desire it and are able to undertake its responsibilities. Furthermore, it held out the prospect of collective action to promote higher standards of living for Asian nations and thus remove a major source of dissidence and unrest.

There now remains the very important task of deciding in more detail how the Manila Pact and the Charter will be implemented, should need arise, to assure cessation of aggression and subversion, and the important task of deciding how the crucial problem of economic development of the underdeveloped areas of free Asia can satisfactorily be met. The first of these problems is under study by the military experts and political leaders of the various nations concerned, including our own. The second—economic development—relates to much that these countries can themselves do to improve their economic position, such as establishing sound budget and fiscal policies, encouraging the owners of such available wealth and savings as do exist to invest them constructively, increasing technical skills and knowledge, increasing agricultural effi-

ciency and promoting greater diversity of agriculture, and providing for more adequate electric power and transportation.

Yet, the most strenuous efforts along these lines will not solve adequately the basic problem of these countries, which is their inability to generate domestically the steady and increasing flow of investment capital necessary to provide for both a rapidly increasing population and the higher standards of living that their populations desire. Only such a flow of investment capital from the outside can provide the necessary stimulant to strengthen these economies. Unfortunately, the movement of foreign private investment capital to Asia since the war has been little more than a trickle compared with the area needs—in recent years less than 25 million dollars annually, slightly over half of which has been United States private investment. I have already mentioned several types of external government-to-government aid extended to these countries. This type of external aid, by effective utilization, has enabled countries in the area to initiate necessary development programs although not as rapidly as we or they believe necessary to improve moderately the living standards.

When we stop to analyze the current situation in the Far East, I think we find, from the American point of view, a mixture of strength and weakness. In terms of surface naval strength and naval air force, the American position is predominant, but we are not so certain when it comes to naval strength below the surface. Here we are keenly aware of the Soviet buildup in submarine power. In terms of land forces the colossal manpower reservoir available to our adversaries reads in terms of hundreds of divisions compared with our present free world strength of comparatively few divisions. In terms of straight airpower the situation is more nearly a matched one.

However, I did not want to discuss the military aspects of the Far East problem, although the impact of military strength on our political and economic policies is of great importance. I personally feel that we are now in a phase where Communist efforts are directed into the classical fields of subversion and penetration by the various techniques which have become painfully familiar. It is in that field that I believe the American business community and especially those who are engaged in foreign trade can be of great utility in the furtherance of American policy objectives. It has become obvious through the years that the Communist technique of indirect operation and projection of their efforts to dominate world areas has shown a reliance on indirection, using front organizations and unofficial representatives in various guises. Their economic and trade policies are weighted with political overtones. Their use of the trade channel in promoting their policies is notorious.

I hope I am wrong in thinking that some of the members of our business community have an easygoing belief that the projection of government policy is a matter restricted to official representatives. Perhaps if we took a harder look at this question, we might conclude that it is the responsibility of every citizen. That is why an understanding of our policies and objectives by the business community is of such immediate importance.

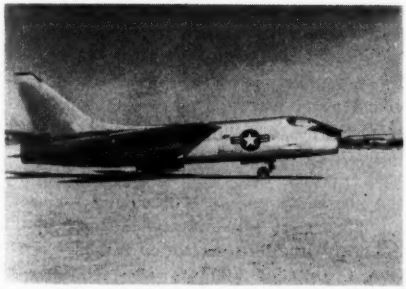
Those in the business community who are in close touch with the Far East are in a unique position to promote understanding on two sides of the water. At home they can help us all to bear in mind the vital importance of expanding trade and establishing closer commercial links with the area. Abroad they can seek to promote awareness of the fact that we are taking positive steps to aid in overcoming the problems the free world nations of the Far East face, formidable as these problems may be.

MILITARY NOTES AROUND THE WORLD

UNITED STATES

Navy's 'Crusader'

Combining the requirements of carrier operations with flashing level flight supersonic speed, the Navy's *XF8U-1 Crusader* gives the United States one of the fastest



Crusader adopted as name of Navy fighter.

fighters in the world. This clean, high-wing aircraft owes its blazing speed and excellent high-altitude performance to its simple, uncluttered design and tremendous powerplant—an afterburner equipped *J57-P-4* turbojet engine.—News release.

Cross-Country Freighter

A large cross-country freighter which differs from the railroad variety in that it travels on huge rubber tires instead of rails, and each car is self-propelled with all-wheel drive rather than pulled by a single lead engine has been ordered by the Army Transportation Corps. The

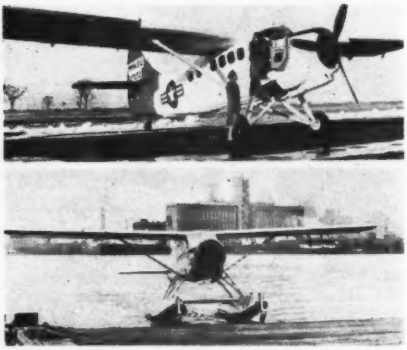
Cross-country freighter studied by Army.

Army has not revealed what it plans to use the vehicle for but others are used by commercial concerns to deliver cargoes of freight to isolated areas. Other vehicles of this type are being readied for the transportation, exploration, and heavy construction industries. Every wheel of

every car has an individual electric motor tucked into its center. Some tires on the freighters range up to 10 feet tall and 4 feet wide and operate on as little as 5 pounds air pressure. These factors allow freighters to travel through sand, snow, or lowland areas where conventional equipment would quickly bog down. Flexibly mounted axles permit the wheels to roll over such obstacles as stumps or ditches without reflecting jolts to the rest of the car. A unique steering arrangement assures that the last car of the freighter will follow the identical tracks of the first car, regardless of how many cars may be in between. These cars can climb a steeper grade than an automobile.—News release.

Supply Plane

The Army has placed an initial order for 84 *U-1 Otter* aircraft which will eventually be used as supply aircraft in forward areas, transporting cargo, troops, and for the evacuation of wounded. The



Supply role for *Otter* in Army aviation.

Otter is a larger version of the *Beaver*, a utility transport for undeveloped regions used by the Army in Korea. The plane can accommodate 14 passengers or the seats can be removed and replaced with litters or to provide maximum space for cargo. The all-metal structure of the *Otter* has been designed to withstand severe operating conditions in remote areas and to require a minimum of maintenance. In some versions the plane has been fitted with an amphibious undercarriage with the wheels retracting above the floats for water landings.—News release.

Uniform Regulations

To achieve a marked improvement in the appearance of its personnel, while at the same time keeping in mind the cost to service members, the Department of Army has announced changes in regulations governing the wear of winter uniforms. Beginning with 1 October 1955 all Army officers and warrant officers will wear standard uniforms of green blouses and "pink" slacks except when in troop formation or when on duty in the field. The olive drab shade 33 uniform may be worn by officers in troop formations until 1 October 1957. On 1 October 1956 officers and enlisted men will be authorized to wear the new Army green uniform as an optional offduty uniform. Starting with 1 October 1957 the new Army green uniform will be required service uniform for officers and warrant officers, except when they are performing duty under conditions requiring field clothing. After 1 October 1957 neither the "pinks" and greens nor the shade 33 will be authorized for wear by officers at any time. Another change in Army Regulations which becomes effective 1 October 1957 is the requirement that commissioned and warrant officers wear the traditional Army blue uniform for offduty occasions. Enlisted personnel will be authorized to wear the Army green uniform on an optional basis for general duty, and for offduty wear either the Army green or Army blue is authorized. Enlisted men coming into the Army after 1 October 1957 will receive one Army green uniform and one olive drab uniform as part of an initial allowance of clothing. The split issue of Army green and olive drab uniforms will be continued until such time as stocks are reduced to

the point where further issue is uneconomical. The cost of "pinks" and greens has been substantially reduced with the complete uniform selling for $23 as opposed to a former price of $34.35. The new regulations will not apply to members of the Reserve components not on extended active duty.—News release.

'Pogo' Flight

A space even smaller than that shown by the black cross in the photograph is all the Navy's *XFY-1 Pogo* needs for takeoff

***Pogo* requires only small operating base.**

or landing. Turboprop-powered and capable of more than 500 miles an hour in level flight, the delta-wing fighter uses only a 50-foot square of the runway as an operating base. It takes off straight up and lands straight down, settling gently onto the four caster-like wheels set into the tips of its wing and vertical fins.—News release.

Pocket Radar Set

A new electronic device has been developed by the Army Signal Corps Engineering Laboratories which may permit the soldier-scout of the future to carry his own tiny portable radar set. The device is the world's smallest self-contained magnetron tube which weighs only 8 ounces and is no larger than a golf ball. Engineers visualize it in a portable radar kit which will warn isolated units of the approach of vehicles or infiltrating enemy troops. The tube was a World War II development shared by the Allies which allowed radar to pinpoint enemy ships and planes through fog and darkness. In its new miniature version, the Army-developed magnetron tube is 50 times more powerful and transmits on a frequency about 100 times higher than that used by FM broadcasting stations. The new tube is expected also to be of military value in short-range field communications between advanced lines and rear echelons. It resembles a standard radio receiving tube in appearance.—News release.

Train Helicopter Pilots

The Army is in the process of negotiating a contract which will provide for the primary flight training of cargo helicopter pilots at a civilian flying school. At present this training is accomplished by utilizing military facilities and military personnel. Under the provisions of the new plan students will report to Camp Rucker, Alabama, for screening purposes before being transferred to a civilian contract flying school for 18 weeks of primary flight training. They will then return to the Army Aviation Center for 12 weeks of advance flight and tactics training. Enlisted men and warrant officers may volunteer for cargo helicopter pilot training. Enlisted men completing the course satisfactorily will be promoted to the grade of warrant officer. This new plan is in keeping with the Department of Defense policy providing that operations be performed by contract with civilian firms when possible to release military personnel to combat units.—News release.

Midget Submarine

The Navy's first midget submarine, the *X-1*, only 50 feet long and accommodating a crew of five, has joined the fleet. The 25-ton vessel is maneuvered with a stick

similar to that used in airplanes. The new submarine was designed for use in testing harbor defenses and for close-in attacks. It resembles conventional submarines except that what serves as a conning tower rises only 1 or 2 feet above the hull. It is powered by diesel engines and storage batteries.—News release.

Voice-Powered Telephone

The power of the human voice has been tapped by the Army Signal Corps Engineering Laboratory to operate a new radiotelephone device. Completely independent of wires and batteries, the voice-operated equipment weighs only 1.5 pounds and continues to operate as long as the user keeps talking into it. The technique employed puts the voice to work so that it both runs and operates a transistorized transmitter. After speech syllables strike the microphone, part of the power is filtered to operate the radio-telephone, while the rest puts "intelligence" into the signal it sends out. At the present stage of testing this new type of energy does a competent job up to 600 feet. Further development plans call for a companion receiver weighing about 3 ounces which could be powered by the same source. Voice energy would be built up and stored in the set when sending and used later for receiving. In military applications the use of transistorized transmissions could eliminate batteries in both walkie-talkies and hand-held tactical radios, thereby cutting their weight in half.—News release.

Test Engine

The most powerful gas turbine engine ever installed in a Navy small craft, the *T-522*, is to undergo exhaustive tests soon. Weighing only 1,000 pounds, which is one-fourth of a comparable internal combustion engine, the *T-522* will develop 500 horsepower. Previous gas turbine engines used in small craft developed approximately 200 horsepower. The Bureau of Ships is supplying a 40-foot personnel boat to evaluate the performance of the gas turbine engine. The series of tests will be the first involving the use of this size gas turbine as a propulsion unit. Called the "Jupiter," the engine incorporates the inherent characteristics of the simple cycle gas turbine which include light weight, ease of maintenance, adaptability to many fuels, low noise level, and reliability of starting even at very low temperatures. This engine was selected for the experiment chiefly because of its dual-purpose potentialities, as either generator or propulsion drive. It is a variable speed engine. Data obtained from this experiment will be considered in determining wider applications of the gas turbine in the Navy.—News release.

Terminal Commands Established

Under a reorganization of the Army's domestic ports of embarkation, all the ports of embarkation, their subports, and outports along the Atlantic, Gulf, and Pacific coasts will be brought under three separate Transportation Terminal Commands. The newly established commands will be responsible for all terminal operations and related activities along their entire respective coastlines. On the east coast, the New York Port of Embarkation at Brooklyn will become the Atlantic Terminal Command. Its subordinate installations, the Brooklyn Army Base and Hampton Roads Sub-Port of Embarkation, will be renamed the Brooklyn Army Terminal and the Hampton Roads Army Terminal. Also included in the Atlantic Command will be the newly activated Sunny Point, North Carolina Army Terminal.

New Orleans Port of Embarkation will become the New Orleans Army Terminal, under the Gulf Terminal Command with headquarters at New Orleans. The Gulf Command will also include the Theodore Army Terminal, Theodore, Alabama. On the west coast, the Ports of Embarkation

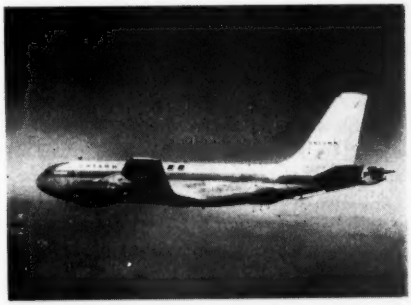
at Seattle and San Francisco will also be renamed Army Terminals, under a Pacific Terminal Command with headquarters at San Francisco. The reorganization will not affect the cargo tonnages presently being handled by any of the terminals, nor will there be any immediate significant effect on personnel. While initially located on the coastlines, it is anticipated that in line with dispersal policy the three terminal command headquarters may later be moved to more centralized inland locations, not yet determined, to provide for greater flexibility and dispersal of facilities in the event of mobilization. The major purpose of the terminal command organization is to facilitate activation of as many military terminals and the utilization of as many commercial terminals as may be required in any emergency with maximum speed and efficiency. Necessary staging areas, holding and reconsignment points, could also be established without disrupting the existing organization of operating terminals. Other benefits from the new organization are better coordination of operations for an entire coastline, centralizing many staff functions at the terminal command level, and consolidating all operating functions at the local terminal level.—News release.

Anticollision Lights

The Air Force is in the process of installing anticollision light systems on all of its cargo and transport type aircraft. These lights are intended to provide better sighting of aircraft in flight and thereby reduce the possibility of collision. The Civil Aeronautics Administration has ordered the anticollision lights installed on all commercial aircraft of 12,500 pounds and over that are engaged in interstate commerce. The commercial installation must be made by 31 May 1956. Several hundred Air Force planes are involved in the present phase of the program in which the lights are being installed in such a position that they may be seen from a 360-degree angle around the line of flight of the aircraft. In some cases more than one light per plane is necessary to cover the area of distribution.—News release.

Flying Boom

Back in the air well ahead of schedule, the jet tanker-transport prototype has begun first-phase tests of its new high-speed flying boom for the Air Force. The new boom is considerably streamlined as compared with the boom used by *KC-97* tankers to refuel *B-47 Stratojets*. It will be thoroughly tested at high speeds and high altitudes. The new device will be installed on the *KC-135* jet tanker now in production and will be used to refuel the *B-52* heavy bomber and new jet fighters. The *KC-135* will be an advanced version of the *707* prototype.—News release.



New flying boom ready for Air Force tests.

Convertiplane Flown

The *XV-3* convertiplane being developed for the Army has been flown for the first time following Air Force Safety Flight Inspection Board approval of the revolutionary craft for flight testing. The *XV-3* is a tilting rotor type convertiplane designed to combine the preferred performance features of the helicopter and the airplane. Employing combination 3-blade rotor-propellers mounted on the ends of a stubby, 30-foot fixed wing, the plane can

take off, hover, and land like a helicopter. Once the desired speed and altitude is reached, the pilot can tilt the rotors forward, approximately 90 degrees, into a conventional propeller attitude for high speed and long distance flights. According to its engineers, the conversion process is a smooth operation requiring from 10 to 15 seconds with no loss of speed or altitude. The pilot can safely stop or reverse the conversion at any point and maintain stable flight with the rotor-propellers in any intermediary position. The tilting rotor design is expected to offer the Army an extremely mobile, flexible aircraft of the type needed in modern warfare. The helicopter is seldom capable of more than 110 miles an hour speeds while the convertiplane can travel cross-country as fast as a *DC-3* and, when it gets to its destination, any clearing serves as an airport. The aircraft may be used to carry four persons, or two litter patients and a medical attendant, in addition to the pilot.—News release.

EGYPT

Arms Deal

Under terms of a recent agreement, Czechoslovakia has agreed to sell Egypt arms on a purely commercial barter basis. In return for the heavy weapons considered necessary for Egypt's defense, Czechoslovakia will receive rice and cotton. Egypt said that the United States, Great Britain, France, and the Soviet Union, in addition to Czechoslovakia, were approached on the subject, but that the Czechs were the only ones willing to furnish the arms without attaching strings. Long staple cotton is the mainstay of the economy of Egypt and during the past year the Soviet Union and other East European Communist nations have increased sharply their purchases of cotton from this area. Heavy tonnage may also go to Communist China under a 3-year barter agreement signed recently. Arms have long been a major item in Czechoslovakia's export trade.—News release.

AUSTRIA

Supply Arms

The Soviet Union and the United States are vying with one another to supply Austria with arms with the aim, according to Austrian sources, of orienting the Austrian Army to either Western or Eastern arms. It was reported that 13 freight cars of Soviet ammunition recently arrived at the Austrian border. It has also been indicated that the Soviet gift will include 20 medium *T-34* tanks. The United States is giving Austria 40 million dollars worth of equipment but has not disclosed the types. Under its new treaty, the country, strategically located between Germany and Italy, is neutral militarily. The Soviet Union, France, Great Britain, and the United States, all former occupiers, have promised weapons to the Austrian Army. In approximately 1 year, this Army will have about 30,000 men. It would have difficulty if equipped with four different calibers and types of weapons. Aware of this, both the United States and the Soviet Union appear determined to give Austria more than it can use in the long run. Use of either Soviet or American arms will require the Austrian Army to call on these countries for technicians for help. So far the Austrian Army of a few hundred men is American-oriented with its core being taken from the federal police force who have been using United States small arms and vehicles for a long time.—News release.

Soldiers March

Marking the end of 10 years of 4-power occupation, an Austrian Army marched through the streets of Vienna recently. The soldiers numbered only 700 frontier guards as Austria's real army, which will consist of drafted youths of 18, will probably not be in being until a year from

now. The service period for nontechnical units will be only 9 months. Marking its departure from the country, the United States Army turned over to the Austrian Government 22 million dollars worth of property for 1.5 million dollars. The titles to all buildings, roads, utilities, and installations built by the United States Army in Austria with dollar funds were turned over to the new Government.—News release.

WEST GERMANY

Organize Army

The way for the enlistment of the first volunteers for the West German armed forces was cleared when the Bundesrat gave final approval to the pay scale for the new military forces. The scale of basic pay for the planned 500,000-man force ranged from $666 for a 4-star general to $57.12 for a private. The Defense Ministry plans to have about 6,000 volunteers in uniform by the end of this year. They will be the first of the 150,000-strong permanent cadre which will lead and train 350,000 conscripts. A Civilian Defense Council was formed to wield supreme authority on defense questions. It is patterned after the United States counterpart of the same name. The council will prepare cabinet decisions on military legislation, civil defense, and economic and financial questions relating to rearmament. It will be superior to the Defense Ministry in all significant matters. It is intended to ensure ironclad civilian control of the armed forces. In theory the council will be able only to make recommendations to the cabinet but the power of decision will be vested in the new body since the council is to be composed of the most important Government ministers. The proposed conscription bill provides that all Germans are subject to conscription. An executive order may extend conscription to foreigners and stateless persons residing in West Germany. Persons between 18 and 45 years of age will be subject to peacetime military service. Commissioned and noncommissioned officers may serve in the armed forces until they reach 60 in peacetime. Wartime service will affect all men up to the age of 60. Young conscripts will receive 18 months of basic training. Those who were too young to have had military training in World War II may be called up for 6 months. Men above the age of 35 will receive a short course of 2 months in the Reserves. Roman Catholic priests, evangelical pastors, and priests of other denominations, as well as theological students, may be exempted if they so desire. Military service may be postponed for personal, domestic, economic, or professional reasons and for persons occupying indispensable jobs. Local draft boards will be composed of three persons—the head of the local reserve organization, the highest ranking official, and a member of the local municipal council. Draft boards will deliberate in secret but their decisions may be appealed to administrative courts. Conscientious objectors will be compelled to serve in civilian branches of the armed services.—News release.

Produce Titanium

West Germany has joined the United States and Canada as the only producers of titanium, the "wonder metal." The metal has several advantages included among which are the fact that it is six times as strong as aluminum, making it almost as strong as steel, and considerably lighter than iron. Titanium is safely guarded to a high degree from corrosion by a hard, invisible oxide coating. The metal has a very high melting point. More heat is needed to make it ductile than for an equivalent amount of iron or copper. It has only been recently, however, that ways have been found to forge, hammer, weld, and roll it. Because of its qualities the metal should have a wide demand, but its price holds the demand down. The price

is approximately $4.90 a pound. Since it is among the earth's 10 most abundant raw materials, ranking above lead and copper, it is only the processing which is blamed for the current price level. West Germany is seeking to become the world's leading producer of this metal.—News release.

'Pasted' Plane

A largely rivetless single-engine metal plane, built in Spain because aviation research and construction were forbidden in West Germany until sovereignty was restored, was displayed at the first West German air show since World War II. The major parts of its fuselage were "pasted" together. The major advantage of the new method of pasting, about which no details were disclosed, is that it reduces the weight of an airplane considerably, making it more economical to operate. The normal method used in assembling airplane fuselages is to use rivets with some planes having as many as 2 million of them. The new plane has been designated the *BL-500*.—News release.

Ocean Liners

The design of new ocean liners to build up the country's passenger fleet has been undertaken by five West German shipyards. It was not revealed how big or fast the new ships would be, but it was stated that they would be smaller and slower than existing major ocean liners. Plans call for ships of approximately 28,000 tons with a passenger capacity of 1,450.—News release.

USSR

Heat Arctic Ocean

The Soviets report that they are thinking of building a mammoth dam across the Bering Strait and warming the Arctic Ocean with waters from the Pacific Ocean pumped across by atomic power. The Soviets said that this would transform the frozen northern parts of Asia, North America, and Europe into habitable areas with a temperate climate. The Bering Strait is 55 miles wide. Hundreds of giant pumps powered by an atomic power station of 2 million kilowatt capacity would be used to pump the Pacific water into the polar sea. The Soviets said this would produce an artificial warm current approximately equal in volume to that of the Gulf Stream. The result of the project according to the Soviets would be something like discovering new continents with a mild European climate and with wonderful natural resources.—News release.

FINLAND

Build Tankers

In the process of construction for the Soviet Union in Finnish shipyards are nine tankers with extraordinary specifications. On each of the 1,180-ton tankers are to be installed three auxiliary power generators. Because of this demand by the Soviets it is surmised that the tankers are destined for some special service. Each of the generators by itself could supply the electrical needs of a town of as many as 5,000 inhabitants. Previously the Soviets had placed an order for harbor cranes to be fitted with power generators capable of feeding current not only to run the apparatus but also to provide a considerable community of workers with light and heat. The consensus among military experts appears to be that the cranes will be installed on the Arctic coast in previously unsettled regions. The tankers are to be reinforced to withstand ice so the inference is that they will operate in polar areas. As the Arctic Ocean is free of ice on the European side, further inference would indicate that these vessels are destined for service north of the ice-locked Siberian coast or in the vicinity of the North Pole itself. The vessels will be fitted out like luxury yachts. Conflicting reports have been given on the

speed of the vessels. One report indicated a normal 14 or 15 knots while a later one listed 20 to 25 knots. Some feel that the tankers are designed to feed roving submarines in the strategic polar wastes with both engine fuel and power to recharge batteries. Others feel that the Soviets are extending their radar network to the remote icefields on the top of the world.—News release.

GREAT BRITAIN

Safety Fuel Tank

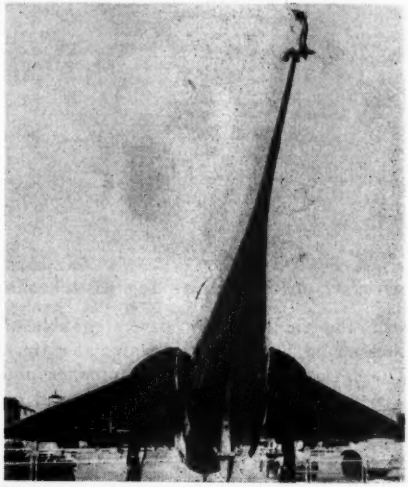
The *Britannia*, giant 100-passenger turboprop airliner being built in Great Britain for overseas service, is getting a new

Safety fuel tank developed for airliner.

type of flexible fuel tank. This new tank is made of synthetic rubber reinforced with nylon. It is expected that it will be less likely to burst and cause a fire in the event of a crash or a forced landing.—News release.

'Droop-Snoot'

The nose of the *Delta-2*, single-seat delta-wing research aircraft has already earned the plane the nickname of "Droop-Snoot." It is powered by an *Avon* jet engine and is the second British aircraft capable of supersonic speed in level flight. Its elongated nose can be lowered like a drawbridge to give the pilot a good forward view for landing, takeoff, and taxiing. Its wingspan is 26 feet, 10 inches and its length is 52 feet, 3 inches.—News release.



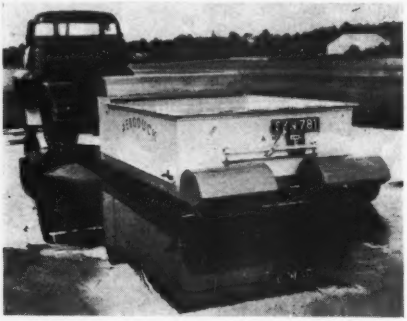
Nose view of the new *Delta-2* supersonic jet.

Atom Protection

British military experts and scientists have concluded that "reasonable" protection can be given to troops against atomic shells in a "limited" attack. During recent maneuvers investigators decided that infantrymen who were digging special defenses against mock atomic attacks would have been safe against 20-kiloton atomic shells exploding 500 yards away. In warfare this would mean that battalions separated by 1,500 yards would be virtually immune to a 20-kiloton shell dropped midway between them. Such a shell would have a blast equivalent to 20,000 tons of high explosive.—News release.

Runway 'Blotter'

The problem of flooded airfield runways which are particularly dangerous for jet aircraft has been solved in Great Britain



Aeroduck dries runways for jet takeoffs.

with the aid of a new device capable of sucking up 500 gallons of water at a time. The device is known as the *Aeroduck* and was evolved from the turf-drier used on cricket fields.—News release.

IRAN

Mark Border

In a project that will require 2 years to complete and cost each country concerned more than 1 million dollars, border teams from the Soviet Union and Iran have begun the task of marking the boundary between the two countries. Much of the 1,200-mile Iranian-Soviet frontier lies across the peaks or shoulders of rugged mountains. The cement, barbed wire, and stakes with which the boundary will be marked will often have to be transported on muleback by little-known trails and passes. Russian troops have marched across the border 10 times in the last 150 years. Diplomats of the two countries feel that the marking of the boundary will end disputes and open a new era of friendship and understanding between the two countries. Agreement to mark the frontier was first reached in December 1954. A 250-mile stretch of the border between the Caspian Sea and the point at which the Turkish-Soviet frontier joins the Iranian-Azerbaijan border has been a nightmare to Western strategists. They felt that by punching a hole through this area, Soviet troops would be able to outflank Turkey's eastern front.—News release.

EAST GERMANY

Rearmament Measure

In amending her constitution to provide for national armed forces, East Germany followed a recent move by the Government of West Germany. The amendment will be put into effect with legislation introducing universal military service. It was pointed out that the action did not mean military conscription but that East Germany's youth should realize that service in the armed forces was a necessary and honorable national duty. It was explained that the military forces would be trained with the most modern techniques of warfare. This action will permit the Government to take an active role in the Warsaw military alliance of the Soviet bloc. East Germany was not included in the initial military arrangements when the alliance was established earlier this year. The creation of a national army is regarded as a formality for it is said that the 100,000-man militarized East German police force, known as the Barracked Police, is already an army in being. The new legislation may produce a change of name and the equipping of the force with modern weapons.—News release.

AUSTRALIA

Expand Navy

An expansion program designed to enable Australia to meet potential war commitments and to support strategic reserve forces in the Far East will give the Royal Australian Navy 10 new ships by 1961. In addition five more ships have been or are being converted for modern warfare it was pointed out.—News release.

FOREIGN MILITARY DIGESTS

The World's Guided Weapons

Digested by the MILITARY REVIEW from an article by Mr. A. R. Weyl in "Aeronautics" (Great Britain) July 1955.

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Two aspects dominate modern defense policy: nuclear weapons and guided missiles.

Nuclear weapons present a novel kind of area-devastating attack with little prospects for defense. Guided missiles are thought best for defense against airborne or seaborne carriers of nuclear weapons and are also thought to be the best carriers for nuclear weapons. In fact they seem to be the only nonsuicidal ones, as far as thermonuclear weapons are concerned. The human element, so it is held, no longer occupies first place in fighting between machines and elementary forces. What brains formerly did in warfare shall now be a job for electronic computors: the brawn which once wielded weapons in mortal combat is to actuate pushbuttons in the security of atom-proofed hideouts.

The traditional challenge between the weapons of attack and the means of defense is beyond the conventional stage of shell versus armor. We are assured authoritatively that nuclear weapons cannot be resisted once they are brought to the target; and that of a number of attackers, some will always manage to penetrate to the target to place the deadly weapon. This is Stanley Baldwin's "The bomber will always get through" translated into nuclear bombing.

Great Britain, unfortunately, is one of the most vulnerable countries. Her ancient bastion of defense, the sea, is now a mere impediment for supply, dispersal, and rescue of her atom-stricken inhabitants.

Characteristics

What are really the essential characteristics of nuclear weapons from the view of defense?

Nuclear weapons are not merely bigger bangs, or a higher concentration of ordinary molecular high explosives. Apart from concentrated blast and a devastating heat flash, they produce radiation harmful to man, beast, and plant, and, by way of fallout, radioactive contamination over a wide area. It is also possible to contaminate an area for the duration by means of the cobalt bomb.

The fission type of weapon derives its energy from splitting an unstable, large atomic nucleus; the debris and radiation affected other material remain radioactive for a long time. To induce such chain reaction of slow neutrons, necessary for the fission process, a minimum critical mass of the fissile material must be assembled. This is done by shooting together, within the weapon, smaller lumps of the fissile material, so as to form a lump as large as the critical mass. If a larger lump than the critical mass is being used, the excess material is wasted because one part of such mass undergoes fission with detonation before the rest is affected. This means that there is a well-defined upper and lower limit for this type of weapon.

The hydrogen bomb or fusion type of nuclear reaction not only produces far greater energy output but also permits the building of weapons without upper limit as to size. In this reaction, hydrogen nuclei are fused together to produce helium nuclei, as in the sun. To overcome the large coulomb forces which keep the hydrogen nuclei apart, fantastically high pressures and temperatures are necessary. These can be produced only by energy which is liberated from nuclear fission. Thus thermonuclear weapons or hydrogen bombs are possible only with initiation by nuclear fission, and if one could defeat nuclear fission, all types of nuclear weapons could be rendered harmless.

Physically, but not yet technically, the possibility exists of making nuclear fission bombs practically impossible, and thus denying to an enemy the power to employ such weapons. If this country were to spend a large amount of money upon the realization of such possibilities, instead of frittering it away upon the upkeep of an administrative apparatus which has so visibly failed to produce anything really valuable for the defense of this country, Great Britain might enjoy an assured future.

As things are, nuclear weapons will be "a must" for any conflagration in the near future should the conflicting political outlooks come to an armed conflict.

Strategic Defense

The present philosophy of defense relies on deterrent retaliation. The abrupt termination of Japan's war of aggression has shown that this is possible. The novel idea is that the attacked party possesses the means to retaliate quickly by devastating blows upon nerve centers in the heart of the enemy's country. Since naval and aerial warfare arose the same ideology has always been suggested, but at no time have the means of retaliation ever been adequate.

Strategic nuclear weapons need no great accuracy. Their effect is lasting as well as far-reaching and paralyzing. They can now be discharged over distances of thousands of miles upon enemy centers, within a few hours after an attack. For any intending attacker this is disheartening news indeed; one is able to appreciate why the Soviet Union is so keen to see nuclear weapons banned.

Never before has strategic defense been in a more favorable position to defeat any aggression, whether lightning or gradual, without the necessity to deploy ground forces, or without mobilization. Never before has aggression been threatened by more dismal prospects.

Of course this happy position will last only as long as the potential attacker is certain that the defender is sufficiently prepared, is willing to defend himself, and is not going to be caught unaware. This is where the danger lies. The nation would do well to ask for concrete evidence of the preparedness rather than to rely upon soothing assurances by security-constipated ministers who are often not too well informed about the state of their departments. A repetition of Pearl Harbor could be the death knell of a nation.

Carriers of the strategic retaliating nuclear weapons will at first be long-range jet bombers, but for the future, guided missiles are foreseen. Preferably, these will be long-range rockets which are immune against enemy interference.

American and British planning provides for intercontinental, very long-range missiles which would carry thermonuclear warheads deep into enemy territory. Ranges of 5,000 miles have been officially quoted for such retaliatory strategic weapon carriers. One design approach is that of a pilotless expendable jet bomber of sonic or near sonic speed. There is no basic difficulty about such a design, and it can be surmised that aircraft firms in this country are deeply interested in it. The problems are to provide a guidance which is really free from enemy countermeasures, and to protect such aircraft from the air defense of the enemy.

The other, technically more involved but obviously preferable, approach is that of a hypersonic winged rocket or ramjet missile ascending to very high altitudes and reaching speeds of approximately 10,000 miles an hour. Such a weapon carrier would allow retaliating blows within an hour following an attack.

Another type of guided missile carrying a thermonuclear weapon may well become of earlier importance for strategic purposes. This is the type carried by a piloted jet aircraft and launched when still a safe distance from the target area. It may be guided either from the carrier aircraft or from a separate airborne command post. In view of the low accuracy which thermonuclear weapons allow by reason of their immense area-devastating properties, a mere ballistic missile might do. Such a missile is immune against enemy countermeasures; if it can fly at hypersonic speeds there is little the enemy can do to frustrate it. This development is more probable because it may be found suicidal to drop large thermonuclear weapons from piloted airplanes. The guided missile dispatch of such weapons would seem the best to give the attacking aircraft a reasonable chance for safe return. Moreover, it would permit long-range attacks with subsonic carrier aircraft, and it facilitates blind bombing through clouds. Heat-flash reflection from cloud layers will be most effective for the spreading of fires over vast areas.

Compared with ordinary molecular high explosives, nuclear explosives have the advantage of not being affected by heating. The relatively small amount of ordinary explosive necessary for triggering the fission process can easily be insulated. Thus hypersonic missile speeds into the target area are practical. This favors the use of high trajectory rockets. The *Sänger-Bredt* project of a multistage rocket ascending to the limit of the atmosphere and terminating in a hypersonic glide has been closely studied in the United States and in the Soviet Union. Ranges of 10,000 miles can be achieved, and with automatic astronavigation a tolerable accuracy in hitting a target area might be attained. In about 5 years operationally practical solutions may be sufficiently advanced for trials.

Deterrent retaliation is usually divided into two phases of which the first, the application of hard blows immediately into heart centers of the enemy attacker, has been discussed. The second phase will be the softening of the attacker's hitting power by paralyzing his means of attack. Both phases may be conducted simultaneously. The second phase differs from the first in that pinpointed attacks have to be conducted against such targets as airfields, harbors, ships, depots, and factories. Precision bombing is thus required. This makes ballistic surface-to-surface missiles of doubtful value even with powerful nuclear weapons. Air launched guided missiles seem most probable, complementary to guided surface-to-surface missiles equipped with powerful homing devices.

As war experience shows, direct precision bombing attacks of defended targets are wasteful.

Tactical bombing is now assumed to make use of nuclear weapons. In this sphere the pilotless bomber airplane—the United States *Matador*—is in competition with the guided and self-propelled projectile—the *Corporal*. Both may be launched from the ground or from ships. In addition, air launched guided missiles will be of great importance for land or sea warfare. Smaller guided weapons will serve against armor and light shipping.

As far as purposes and applications are concerned, guided missiles have much in common with field artillery. Mobility in action and minimum demands upon supply lines are supreme requisites. In view of the impact of nuclear weapons, the gun will have to yield to self-propelled projectiles of guided or of plain ballistic type. This change will also give the greater depth in the battlefield which tactical nuclear weapons demand.

Mobility in the battle area has, as stated, become of paramount importance, and supply through the air may, in the future, become the rule instead of the exception. From the military point of view, guided weapons still leave much to be desired. To operate a certain United States Army tactical missile type in the field, not less than 13 supporting vehicles carrying the electronic control and the supplies are needed. This cumbersome and heavy ground equipment is not much less than the United States Army's 280-mm atomic gun train, which proved hopeless during maneuvers in Germany.

In view of this logistic problem, Army staffs are inclined to favor ballistic artillery rockets which need no control posts cluttered up with electronics. *Honest John* is an example of this trend; it is also under consideration for our Army.

Beyond this, this country is now committed to the use of the American *Corporal Mk 2* rocket with an operational range of approximately 60 to 80 miles. If those in power had cared to follow up the German *V-2-Wasserfall* development, no necessity would have arisen to make this belated purchase of foreign produce.

Piloted bombers and fighter bombers, apart from antishipping aircraft, have their striking power increased by the provision of guided or homing air-to-ground missiles, with or without self-propulsion. This not only permits high accuracy in hitting a ground or sea target, but allows the attacker to keep at a safe distance from enemy air defense. The air launching of large rockets is now safe.

It can also be foreseen that guided missiles may bear the brunt of reconnaissance and observation in the future. Such missiles might carry automatic cameras and be recoverable; or they could be equipped with television transmitters. It must take time until missiles for such purposes can be operational. The idea is not new: to attain accuracy in blind bombing, the Germans experimented with guided glider bombs in which a television camera with transmitter had been installed. A similar device was used in Korea when pilotless obsolete airplanes, loaded with high explosive, were sight guided to enemy centers far beyond the lines.

Related to this idea of reconnoitering missiles is the conception of global surveillance by a small earth satellite. There is no doubt that this conception is seriously treated in the United States as well as in the Soviet Union. One has reason to hope that development in that direction may prove successful, because the military importance of such projects is by far overshadowed by the immense gain for basic science and research which could be derived from it. It is a cause for regret that this country has hitherto refrained from displaying an interest in the matter.

Retaliation after an attack is of little use if the country attacked is either un-

willing or incapable of defending itself against new forms of blitz pressure. The warning example of Pearl Harbor will be nothing against the effect of lightning strikes with nuclear weapons and up-to-date weapon carriers.

Air Defense

The clan of believers in the pushbutton war visualizes that guided surface-to-air missiles will clear the sky of enemy intruders, piloted and pilotless. Two types of radio guidance are to do the trick. One is beam-riding, in which the antiaircraft missile is guided along a radar beam close to the target; then homing devices take over and do the rest. The other, command-guidance, is to steer the missile by way of signals calculated by an electronic computer to intercept the target. For piloted fighter aircraft there is no place in this conception: "We should once and for all write off the fighter as a means of defense," stated General Sir Frederick Pile years ago, in admiration of the "controlled projectile."

At present the air defense of this country is, in fact, committed to a most ingenious, entirely automatic antiaircraft scheme which does not even require the operation of pushbuttons. This new development is linked to the revised and amplified chain of radar search stations which now covers the entire area and all approaches of the British Isles. An additional "network of electronic instantaneous response controls" which is under development will automatically scan all objects traveling in the air. Such observations will be passed directly into "centrally based computers," and the object scanned will be automatically identified as friend or foe. If identified as foe, the computer will "trip a switch which sets off action pulses"; these, in turn, start the firing devices for those missiles which are closest to the target. All this will take place within a fraction of a second.

On paper, and considering hypersonically descending rockets with thermonuclear weapons, this concept of automatic, electronic defense sounds enticing. In theory it might work, provided the intruders were obligingly making appearances in single file; provided they would kindly refrain from playing deceptive tricks; and provided that electronics were reliable. To make these assumptions would be improvident.

In general the defense of a target area has to allow for intruding waves composed of a great variety of aircraft, missiles, and decoys arriving fairly simultaneously at different altitudes and from all directions over the target zone, most possibly at different speeds and with different trajectories. At the same time deceptive attacks will be simulated upon other targets. In view of the restricted number of nuclear weapons, not all intruders will carry them. One or a very few of the intruding aircraft or missiles will do that. At the instant of the attack, the ether will be saturated with jamming and radio countermeasures of all types, ranging from huge displays of "window" or other radar targets to enemy operated responders and transponders automatically tuning in to any frequency or pulses needed by the defense. How, under such circumstances of well-planned confusion, the required multitude of electronically guided antiaircraft missiles will clear the sky before the thermonuclear weapon detonates over the target area is difficult to imagine.

Radar, the panacea of defense by guided missiles, is by no means infallible and all seeing. Missiles can be constructed so that radar will be practically unable to get the response needed for ranging or tracking. Centimetric radar is affected by rain and by heavy clouds. It is also affected by air ionization following severe attacks with nuclear weapons. The unreliability of electronic computers is notorious to all those working with "electronic brains."

All other homing devices are open to enemy deception.

The pilot of a fighter will possess ability of judgment and the facility to discriminate between a multitude of targets so as to single out for attack the target which is most likely to carry area-devastating warheads or bombs, leaving alone the decoys and the small fry. For the fighter pilot this is no novel situation, since he has always been trained not to scrap with aircraft protecting the bombers but to go for the bomber.

Piloted Fighters

Piloted fighter aircraft cannot, of course, be as maneuverable as guided missiles. Moreover, operation at very high altitude impairs the faculty of focusing the eyes properly for finding the enemy in time from a far distance. It is here that the resources of the pushbutton warfare will come in effectively. All-weather fighters are useless without them. There is much to say in favor of a compromise between the guided missile and the fighter airplane. One can imagine that some kind of guided missile with a pilot in it would be preferable to an all-out automatic defense scheme. In this case the pilot would take over control as soon as guidance from the ground—or from a high altitude air defense control post—had brought him close to targets and positioned properly for target identification, target selection, and attack. This solution it seems has not escaped attention in this country.

The Germans made an attempt in this direction by developing the *Bachem Natter* vertical takeoff rocket-propelled interceptor. This did not reach operational employment, and the aircraft was partly expendable. Improved automatic guidance and homing devices which are now available would give a very good scope to a guided missile manned by a pilot-gunner.

More progressive solutions for the design of a similar vehicle are in existence, and the guided piloted supersonic interceptor no longer needs to be partly expendable. A very promising design is that of the coleopter with a ring-shaped wing which simultaneously serves as a duct for the propulsive jet.

It is agreed, today—even in this country of sentimental archery—that guns have no future in air combat. More than 5 years ago we argued the reasons in detail. In spite of all sound arguments, 9 years were wasted on copying a German gun which could have been had for the asking. The resulting gun is the present operational armament of all British fighter aircraft.

As pointed out at the time, two schools of thought lay claim to the inheritance of the airborne machinegun; one represents the ideology of the torpedo, the other that of naval gunnery. This country decided in absolute favor of the torpedo ideology—without providing the aerial torpedo—while the United States and the Soviet Union adopted both trends of thought. The difference is considerable; it reflects both upon fighter aircraft development and upon fighter tactics.

The aerial torpedo is an airborne, guided or guided homing missile. It is a "single shot, one hit," long-range weapon which is rather expensive, carries an intricate mechanism, electronic equipment, and delicate sensing devices, apart from propulsion, servo controls, discriminating devices, self-destructor, and batteries. Hence its operational reliability is in doubt. Since such a missile is guided and/or homing, enemy interference might be brought to bear upon it. A British type under development—now cleared for limited production—is said to rely upon infrared radiation sensing for final target seeking. Once the enemy is aware of that—and many present air-to-air missiles today are heat seekers—it will not be difficult for him to provide countermeasures.

Apart from this, modern fighters can

carry only a limited number of such aerial torpedoes, and as these guided missiles have quite substantial bulk and weight, fighters are likely to grow into respectable light bombers. An underwing stowage would rob the fighter of its speed. Even if it were possible by an enormous expense of propulsive power to attain supersonic speed with such encumbrances, aerodynamic heating would have an unpleasant effect upon the missile. Thus the torpedoes will have to be stored internally or be podded into streamline containers.

The advantage of the aerial torpedo is that attacks can be made over wide ranges —3 to 5 miles and even more. Tactically, this is important in the outer fringes of air defended regions; there can be no doubt that guided and homing air-to-air missiles have come to stay, in spite of their obvious operational limitations. The alternative is the small, ballistic and supersonic rocket or ramjet powered projectile. Of this a considerable supply can be carried by conventional fighter aircraft to be fired in salvos or in ripples. The German R_4/M rocket projectile has formed the basis for corresponding American, Soviet, French, Swiss, Swedish, and other developments. The *Mighty Mouse*, operational in modern United States and Canadian fighter aircraft, is an enlarged version. It is thought to be the most effective air-to-air weapon in existence—except for engagements over very long ranges of attack. Admittedly such ballistic projectiles have neither the range nor the near miss destructive power of the aerial torpedo; but they are quite immune to enemy interference or decoy methods. Moreover, they are much cheaper and easier to produce. They can harbor a simple type of proximity fuze, and their ballistic dispersion can be kept within acceptable limits.

Concerning a decision between the two conflicting ideologies, it may well be that as in naval warfare both weapon categories will be needed. It might, however,

Relationship of 1942/1945 German missile types with postwar developments.

Basic German missile type	V-1 (FZG-76)	V-2 (A-4)	Wasserfall	Rheinbote	A-9/A-10 and Sänger-Bredt	Natter	R-4/M	X-4	X-7	Taifun	Feuerlilie (Hecht)	Rheintochter	Schmetterling (Hs 117)	Ensian
Class	Pilotless bomber airplane (subsonic)	Rocket missile (supersonic) ground-to-ground	AA rocket (supersonic) winged	Artillery rocket (multi-stage)	Very long range, two or three-stage winged rocket missile (hypersonic)	Piloted guided rocket-propelled interceptor airplane (vertical to)	Supersonic ballistic rocket projectile, folding fins (air-to-air)	Wire-guided air-to-air rocket missile (supersonic)	Wire-guided air-to-ground rocket (supersonic)	Ballistic AA rocket (supersonic spin stabilized)	Winged guided AA supersonic; (also air-to-air)	Cross-winged guided AA rocket. Supersonic (tail-first)	Guided AA rocket airplane (subsonic)	Guided AA rocket airplane (tailless)
Propulsion guidance	Pulse jet	Liquid bi-propellant rocket	Liquid bi-propellant rocket; command guidance; acoustic homing	Solid propellant rockets (four stages)	Liquid propellant rockets	Various; beam rider (semi-expendable)	Solid propellant	Liquid or solid propellant; command guidance; acoustic homing	Solid propellant	Liquid propellant	Various; beam rider; acoustic homing	Various; beam rider; acoustic or infra-red homing	Various; command guidance; proximity fuze; infrared homing	Liquid bi-propellant rocket; command guidance; proximity fuze; homing device
USA derivations	KDD-1 KUW-1 KD-2 etc.	Viking Aerobee Corporal Redstone Zeus	Hermes A-1 Natir Corporal Nike	Honest John	Atlas Hermes	Northrop DB	Mighty Mouse Aeromite	Sidewinder		Loki	Falcon Sparrow	Lark Talos Terrier Firebird	Bomarc	Snark Regulus
British derivations		NN (UD)	NN (UD)			NN (UD)				NN	NN	NN	Stooge	
Soviet derivations	?	A-4 improved; operational; also submarine-launched	NN (operational)	NN	A-9/A-10 (M-103 two-stage)	?	R-4/M improved; operational (MiG-15)			NN improved version; operational (also naval weapon)		NN	NN (also jet-propelled)	
French derivations	Arn-S-501	NN				Coleopter (UD)	Oerlikon?	NN	SS-10	NN				

Abbreviations:
NN—type designation not stated.
UD—under development.

be impractical to provide for both weapons in one and the same fighter.

An important point is that when launching any kind of rocket-propelled missiles from an aircraft, the pilot should not find his view obscured by a cloud of smoke, or he will be unable to follow up the attack and will be a sitting target for the enemy. This difficulty is not yet overcome, and ramjet propulsion would have some advantages. The United States rockets seem particularly prolific producers of smoke.

Zoning

It is certain that air defense must rely upon piloted fighters as well as upon surface-to-air missiles for a very long time to come. Altitude and area will provide an appropriate division between the functions of these two pillars of defense.

One might visualize three distinct zones of defense around a vulnerable area. Outside the outer zone would be airborne warning posts. The Americans are using *Super Constellations* with radar search equipment which is continuously operating. These aircraft may also serve as air defense control posts. The defense of the outer zone is formed by seaborne vessels equipped with surface-to-air missiles, and by standing patrols of long-range fighters able to engage over long distances and adapted for fueling in flight. Eventually airborne stations—flying antiaircraft batteries—may be needed to launch very high altitude missiles against attackers maneuvering at extreme altitudes. This would be preferable to the use of 2-stage defense rockets launched from seaborne vessels, and would save valuable time for interception. A high flying adaptation of the *Beverley* might render sterling services.

The second zone of defense would be by fighters alone. Three classes of defensive piloted fighter will be needed; the all-weather fighter, the standard interceptor for general use, and a rocket- or jet-propelled interceptor of short duration but with extreme climb and ceiling and very high speed at altitude, in short a manned guided and controllable rocket, preferably recoverable or semiexpendable. Operational types of this class are still in abeyance.

The inner air defense zone should work with surface-to-air missiles alone launched from prepared ground stations. Care must be taken to avoid that more damage is done by the defending means than by the enemy. Guided and ballistic missiles carry far more explosive than the antiaircraft shells of yesterday—which relied more on splinter formation than on blast. Self-destructing devices are not always reliable, and rockets carry fuels and most unpleasant oxidizers which will prove first-rate fire raisers.

Special attention is needed to the low and fast flying intruders as well as to intruders arriving at extreme altitudes. Either may carry the dreaded weapons of mass destruction because these have no need for accurate aiming.

This visualized form of air defense still suffers from two inherent weaknesses. It makes no provision to deal with hypersonic weapon carriers which, like the *V-2* rocket, may suddenly descend from extreme altitudes, there being no substantial heat barrier with nuclear weapons. The second objection is that warning, mainly or exclusively, relies upon radar search. Moreover, all search, ranging, tracking, or followup devices make use of pulsed shortwave beams, and all communications rely on radio waves. Since electric waves can be interfered with, this seems too much of "putting all eggs into one basket" for being entirely satisfactory.

Surface-to-air missiles for air defense will, as a rule, be guided either by the beam-rider or the command-signal system. But there is also scope for plain ballistic (supersonic) missiles, with or without target seeking devices, and with proximity fuzes. It is important to have such sur-

face-to-air missiles. They will be the standby if the electronics or the radar guidance should break down, as they might well do in action; also, the sole means of dealing with hypersonic weapon carriers will be by way of high altitude rocket barrages. One may even think of airborne batteries with barrage rockets.

Special classes of barrage rockets, too, might be valuable to lay protective dense smoke clouds over vulnerable target areas in immediate danger of nuclear explosions. Dense smoke reduces the effect of the heat flash and also damps somewhat the intensity of the gamma flash.

For Great Britain defense at sea is vital. Cruisers and battleships will be superseded by guided weapons carriers. Such surface vessels are, unfortunately, highly vulnerable against attacks with nuclear weapons; they are also easily spotted in the sea. The risk may be acceptable for air defense. For strategic purposes, however, submersible guided weapons carriers would pay. They need not be true submarines because it would not be necessary for them to move at speed when submerged. The ability to launch guided missile attacks from under water, and the protection against heat flash, blast, and fallout should be of great value. The danger from nuclear underwater detonations is not great, in view of the restricted zone of destruction, and the corresponding use of nuclear weapons will most probably remain restricted to harbors, sheltered waters, or convoys.

Submarine launching of missiles, too, may help to hide the treacherous pall of smoke which is produced by all booster rockets which are at present in operational use. For the enemy, no marking of a target could be more welcome. Nevertheless, little attention is paid to smoke reduction.

In view of the technical development in the design of submarines, greatly improved weapons are needed for antisubmarine warfare. Submarines no longer need to surface for recharging their batteries. Besides, the "Snort" permits high speed well submerged with the diesel engines working. The "Snort," too, can be rendered immune to detection by radar; heat and electrostatic sensing devices are not sensitive over substantial distances. Fully submerged, the use of hydrogen peroxide turbines gives complete independence from the atmosphere. The impending introduction of nuclear power propulsion will allow an exceptional radius of action.

The detection of submerged submarines and their destruction by guided and homing air-to-underwater missiles has thus become of special importance. The American conception is to use helicopters or small airships with dunking sonobuoys—devices to pick up sound made by submarine propellers. The detection is followed by the release of missiles, sophisticated air launched marine torpedoes, with underwater propulsion and appropriate sensing devices. Since electrical radiation methods are useless under water, other methods, such as acoustic homing and magnetic sensing are adopted. It is, of course, possible to use smaller types of nuclear warheads against submarines, thus giving more certainty of destruction. In view of the limited supply of such weapons and of the large number of submarine vessels, this might, however, not become general.

In land warfare a guided weapon tank can be foreseen. Whether such weapon carriers will replace the self-propelled gun or the gun-armed tank is yet uncertain.

Present State

In spite of the secrecy with which information on these weapons and their tactical use is surrounded, a large variety of missile types, particularly American ones, has become known. Practically all this information comes from the United States. In this country, as in the Soviet Union, little

information has been handed out; yet even this little allows one to envisage dozens of different types, ranging from conventional, but pilotless, airplanes to sizable multistage rockets able to reach the limits of atmosphere.

It would be grossly misleading to think that all these types might come into operational use. In fact the circumstance that types have become public indicates—with few exceptions—that they will not be used in active service. Most of the publicized types are purely experimental or research vehicles; others have been either canceled during development or are obsolete. A very few known designs—all American—are in production for operational use. In the United States about 20 missile types are said to be under construction. Six of these missile types are actually operational; of these again, about three designs are already obsolete or obsolescent; they will soon be superseded by more advanced types. In this country not one type of guided weapon is operational or in production. So far production orders are being placed for one air-to-air guided missile. Of two or three other missile types, development is sufficiently progressed to hope for an early decision on acceptance, with eventual production orders. Several other types are said to have reached the stage of operational trials. About 1,500 trial missiles of all versions are said to have been launched at Woomera, Australia, and in this country. This may cover as many as 10 basic missile-weapon types, distinct from mere test vehicles and research missiles.

By contrast, Hitlerite Germany in 1944 had no less than 77 different missile types —not counting many variations of the same basic designs under active development. This was condensed to nine types for production; of these, two strategic missiles—*V-1* and *V-2*—became fully operational and were in mass production, while a large supersonic antiaircraft missile, *Wasserfall*, was ready for mass production, and a tactical (ballistic) long-range artillery rocket, *Rheinbote*, was in limited production and operational use. The rest were three types of antiaircraft missiles and two types of air-to-air missiles. A similar intelligent selection would apply today for a major power, probably with an addition of four or five special weapon classes for specialized land and naval warfare.

It is puzzling that during the period since 1945 progress with guided weapons has been slow. There can be no doubt that this has been so; it is obvious without lifting the veil of secrecy. Let us quote a few competent opinions publicly expressed in the United States:

. . . . *Guided missile development still has in some respects not reached the stage the Germans had attained at the end of the war.* . . . (Dr. R. E. Gibson, Applied Physics Laboratory, Johns Hopkins University, February 1950.)

. . . *10 years' guided missile development cost at least 4 billion dollars. None of the missiles in production today is operational at anything like the effectiveness expected by its designers.* . . . ("Aviation Week," 15 March 1954.)

. . . . *It is ridiculous to suggest that since guided missiles are becoming available, the guns and bombers should be scrapped. No matter how good they look on paper and in field tests, guided missiles cannot now supplant the proved weapons of warfare.* . . . *Guided missiles will be introduced gradually into operating doctrine as complementary weapon systems.* . . . (Rear Admiral Charles Horne, United States Navy, "American Aviation," 25 October 1954, page 46.)

Other United States experts stated in 1954 that it would be between 5 to 10 years before long-range guided missiles would become operationally useful. We

shall now try to analyze the dominant reasons.

The expectation—based upon German production figures for *V-1* and *V-2*—that guided missiles would be cheap and easy to produce has proved a dismal fallacy. a bottleneck everywhere. This concerns not only the missile itself but the ground equipment which is required to operate it and to test its components. Guided missiles have become highly complicated and delicate. Even a relatively simple guided anti-

Surface-to-air missiles (from foreign sources).

Type	Configuration	Warhead	Propulsion	Launching	Guidance	Weight and Dimensions: Gross wt (lb)	Len'th (ft)	Diam (in)	Span (ft)	Performance: Speed (mi/hr) or Mach	Ceiling (ft)	Range (mi)	State	Notes
Wasserfall	Cruciform wings with fins	100 kg HE	LP rocket	Vertical with booster rocket	Visual command guidance: acoustic homing	(8,400)	(25.6)	(26)	(8.2)	(1,300)	(33,000)	(20)	1945 in production	Not fully operational. Beam-riding guidance under development.
Bomarc (F.99)	Conventional monoplane with swept wing; underslung propulsion units		Two ramjets podded at fuselage; also rocket	Vertical with booster rocket	Command guidance; radar or infrared homing	(8,500)	(66)		(36)	M 2.0—2.5	(60,000)	(50)	Production delivery expected 1957. USAF	"Automatic high-altitude fighter"; GAPA development; eventual equipment with smaller projectiles.
Firebee	"		Axial-flow turbojet (Fairchild J.44)	Rocket-assisted takeoff		(2,500)	(18)		(12)				1954 in production	Also target for aerial gunnery.
Hawk												(50)	UD 1954	Low-altitude AA missile.
Lark	Cruciform wings and fins		LP rocket	Vertical booster rockets; also oblique launching	Beam-rider; semi-active radar homing; also command guidance	(1,210)	(14.4)	(15)	(6.5)	M 0.9		(10)	Since 1950 in production for US Navy; production now complete	To 1945 US Navy specification. 100 launched during development since 1947.
Nike	Tail-first, delta-wings	HE	LP rocket	Vertical SP booster rocket (finned)	Command guidance (previously, beam-rider) computer-control	(1,000)	(20)	(12)	(5.0)	M 2.0	(60,000)	(18)	1,000 available end 1953 (US Army); improved versions in production	Operational since 1953 (US Army); 25 miles air cover around fixed launching site.
Terrier	Cruciform wings and fins with swept leading edges	HE	SP rocket	L'ched in pairs; booster rocket	Beam-rider	(3,360)	(14.75)	(12)	(12.5)	M 2.0	(53,000)	(10)	In quantity production, operational	US Navy development; first tested Nov 1951. *Defense* of ships.
Oerlikon MX-1868	Cruciform tapered wings; no fins	HE prox fuse	LP rocket	Booster rocket	Beam-rider	(550)	(16)		(13.0)	(1,700)	(66,000)	(12.5)	Under assessment by USAF	Swiss design of 1950.
Talos			LP rocket and ramjet combination	Booster rocket	Beam-rider ("coded radar beam")								"	US Navy development (still in progress).
Soviet NN	Ballistic barrage rocket; 4 fins	1.8 kg HE impact fuse	SP rocket		Ballistic	(13.5)	(1.95)	(3.2)		(800)			1943 operational.	
Taifun	"	0.6 kg HE	LP rocket		"	(64.5)	(6.32)	(3.94)	(0.73)	(2,000)	(50,000)	(7.5)	1945 operational.	
Loki	Spin-stabilized "	HE prox fuse	SP rocket		"		(6)	(3)					1953	US Army adaptation of Taifun.

It has been found that even with the United States production technique which is, admittedly, equalled by none, modern guided weapon designs make far more claims upon manpower, workmanship, and equipment, as in testing and maintenance, than any other weapons or weapon carriers. The manufacture and production quality of electronic equipment has proved aircraft rocket missile like *Nike*—which is obsolescent—has not less than 1.5 million parts, many of them, such as electronic tubes, valves, and gyroscopes, are highly critical. A few barrages with such missiles will exhaust the industrial capacity of any power. This gives force to the argument that pure ballistic missiles, without control and guidance, should not be

neglected. It also indicates why it has become a major decision to select a guided missile design for production. This makes comprehensible why in this country those in power are hesitant to commit themselves. There is even reason to doubt whether the electronic industry could cope with really substantial orders for guided weapons. Large-scale imports of critical parts and components might well be needed. Likewise, but to a still greater extent, the Soviet Union is severely hampered in guided missile supply by insufficiency of production in respect to precision engineering and electronics. The industrial capacity of East Germany, Czechoslovakia, and other satellite states is being exploited for Soviet missile production. In addition, much importance is being given to ballistic missiles and to inertial guidance. The provision of propellants needs the backing of a large and comprehensive chemical industry of very high capacity.

Apart from exceptions, all guided weapon development here, in the United States, in the Soviet Union, and elsewhere is based upon the German work done between 1939 and 1945. In many instances present operational types are merely improved copies. The research and development of the past 10 years has rarely created any basically new configurations. In most instances, too—Great Britain excepted—German weapon designers were invited, collected, or ordered with subtle persuasion on the Soviet side to continue their developments and to impart knowledge and experience. The United States and the Soviet Union divided the engineering staff of the Peenemünde Research Establishment among themselves, besides absorbing most of the German experts in related fields. France, too, invited some of the top missile brains, and placed ex-German technicians into top-ranking engineering positions.

The most copied design is, of course, the *V-2* strategic rocket missile, a development of basic ideas by Professor H. Oberth, who was left unemployed and forgotten in Germany, thanks to intrigues and because of ingratitude of his pupils. Apart from the *V-2*, practically all other German missile designs—even those which in Germany had been discarded for operational use—have been taken up somewhere and somehow. The sole missile type now extinct is the *V-1* pilotless bomber. Although economical in production, it became too slow with its pulse jet propulsion, and also offered poor prospects for the installation of controlled guidance equipment. Nevertheless, various versions of the *V-1* have been constructed in the United States, France, and the Soviet Union. This country acquired a number of French built specimens for target practice.

The *V-1* class of missile—pilotless subsonic airplane—is superseded by turbojet-propelled pilotless bombers, such as the *Matador*, with near sonic speeds and a longer range. Such missiles are fully operational for tactical employment.

Major progress has been made in more elaborate, automatic guiding, using electronic computers—an amplification of initiated German development, employing much improved homing systems and discriminating devices. The reliability and dependability have more closely approached the level of operational requirements. Much progress was made in the coordination and integration of weapon systems.

Of all components of guided missiles, those relying on electronics have proved the least reliable. Electronic tubes and all types of electric connections are major culprits. Accelerations of up to 50 g are common limits for missiles; in addition to an initial acceleration, high maneuvering accelerations have to be sustained while the "electronic brain" is fully at work. Beyond this, rocket and ramjet propulsion produce high levels of vibration, and the temperature within the missile may

undergo rapid changes. Miniaturization is necessary; this helps in withstanding the stresses, but renders inspection and fault-finding difficult. Potted and printed circuits help to remove likely causes for failure, but the problem of tube reliability is still much felt, in spite of close inspection, preaging, and the like.

New and important developments are the transistor—a semiconductor oscillator or amplifier which needs no therminic heating—semiconductor rectifiers, and certain radically improved tube designs. To some extent, transistors initially proved a disappointment because of increasing unreliability with age; moreover, different circuits are needed, and the costs are high, particularly with improved models which cannot yet be mass produced. These developments are thus still hopes for the future. More immediate value has the mechanical production of modules—complete electronic basic units—a successful project which the United States Navy has sponsored.

The reliability of missile propulsive

Surface-to-surface missiles (from foreign sources).

Type	Configuration	Warhead	Propulsion	Launching	Guidance	Weight and Dimensions				Performance			State	Notes
						Gross wt (lb)	Length (ft)	Diam (in)	Span (ft)	Speed (mi/hr) or Mach	Ceiling (ft)	Range (mi)		
V1 (F2G-76)	Airplane	700 kg HE impact fuse	Pulse jet	Catapult	Inertial	(4,860)	(25.4)	(32)	(17.7)	(380)		(200)	1944 operational	Obsolete
V2(A-4)	Finned rocket	975 kg HE impact fuse	LP rocket	Vertical	Inertial	(27,600)	(46)	(65)	(11.7)	(3,400)	(600,000)	(220)	1944 operational	Improved versions still operational in various countries
Corporal	Finned rocket	HE or nuclear	LP rocket	Vertical	Beam riding till propulsion ceases, then ballistic	(12,000)	(40)	(30)	(2.6)	M 3.0	(268,000)	(150)	1954 operational	US Army; earmarked for Britain
Honest John	Finned rocket, three tail fins	HE or nuclear prox fuse	SP rocket	From roadable launching ramp	Ballistic	(5,900)	(28.1)	(30)		M 1.5		(75)	1953 operational	US Army; earmarked for Britain
Matador B-61	Airplane	HE or nuclear prox fuse	Turbojet	From roadable launching ramp	Beam-rider (airborne control post)	(15,000)	(39.5)	(53)	(28.7)	(600)	(45,000)	(550)	1953 operational	USAF
Navajo B-64/65	Tail-first airplane	Nuclear	Ramjet and rocket		Inertial: later star-tracking								Under development	1954 first trials. Long-range missile
Regulus	Tailless airplane with swept wing		Turbojet	Catapult and booster rocket	Radio-guided	(14,500)	(32)	(51)	(21)	(600)		(500)	1954 introduction	US Navy. For amphibious warfare
Snark (XB-62A)	Tailless airplane with swept wing	Nuclear	Turbojet	Catapult and booster rocket	Star-tracking guidance	(14,000)	(32)	(48)	(32)	(660)		(1,000)	Under development	USAF. Under test. Long range
Soviet M 103	Two-stage winged rocket missile	?	LP rocket	Vertical ascent with 68 tons booster rocket		(200,000)				(5,000)		(3,200)	Under development	Based upon German work
Hellcat	Obsolete fighter airplane flown pilotless under radio guidance		Reciprocating engine and propeller	Normal to	Radio-guided from airborne control post	(11,400)	(33.3)		(42.75)	(375)	(38,500)	(1,800)	1952 operational	
Redstone	Finned rocket missile	Nuclear	LP rocket	Vertical	Early versions: initial beam riding followed by inertial or star-tracking guidance		(60)	(60)				(300)	1954 under service trials; about to become operational	US Army; V2 development by ex-German technicians; related to GEC Hermes
Hermes A-3	Finned rocket missile	Nuclear	LP rocket	Vertical	Probably similar	(12,000)							Operational?	US Army; tactical bombing
Australia Jindivik	Subsonic airplane (low wing)		Turbojet	From jettisonable trolleys	Radio guided		(22)		(19.5)				Experimental	Employed as recoverable "target drone"
Oerlikon type 54	Winged rocket. Cross-winged tail-first arrangement (Δ shape)		LP rocket	Vertical with SP booster	Beam-rider	(770)	(19.7)	(15.7)		M1.35	(49,000)		Experimental	"Rheintochter" development? Also for air defense

plants and control units has been greatly improved. Failures in this direction are now satisfactorily rare. Like the marine torpedo, techniques have been developed for testing all components before launching in service. This forms an important part of operational handling.

Slow Progress

To quote some United States figures on missile reliability: 60 percent of all guided missile mishaps can be traced back to electronic insufficiencies; of these, 86 percent are caused by tube failures. The cost of maintaining the electronic equipment during its life period is 10 times or more than the initial cost.

Nobody can justly claim that 10 years of government financed development are a short period. Between 1908 and 1918 the airplane, its aero-engine, and all accessories reached a high stage of development, from scratch. In this country, as well as in the United States, pilotless aircraft had been experimented with long before the wealth of the German development became available. It is no use pretending now that guided weapon development in this country began "just a few years ago."

Likewise, there is little justification for arguing that delay has been due to insufficient means. The means granted by the taxpayer here and in the United States have been ample indeed. As far as the British effort is concerned, the impression is that less might have achieved more. Moreover, when Parliament agreed to the expenditures the expectation was that some production would be covered. There has been no production whatever. The efficiency of management is, hence, in doubt.

The American effort cannot be compared with the British development policy.

When Hitlerite Germany was threatened by a war of attrition, the green light was given to all in Germany who had technical conceptions concerning guided weapons. In the midst of a war and also economically this might seem a wasteful method. But it worked remarkably well; if the war had lasted a year or two longer, Allied bombers might have found operations over Germany to be suicidal.

Realizing the immense value of free competition in a sphere in which even the basic ideas cannot yet be fixed as design rules, the United States development rests on a wide basis, providing for competition between the three services and permitting duplication or overlapping of projects. As soon as service trials are completed, selections are made for production. At the same time some information concerning experimentation, obsolete designs, and discarded projects is permitted to leak out so as to provoke new ideas—which may not always come from the chosen few who are dealing with guided weapons.

In this country a wall of security conceals everything connected with guided weapons—just as the monopolistic work of the defunct Royal Aircraft Factory was once hidden to shelter it from criticism. No glimpses behind it are allowed to the taxpayer. From time to time enrapturing eulogies have been enunciated by official persons, praising the splendid work done with so great a success, and full of admiration for the few wondermen who were performing such feats.

It has been admitted in Parliament—in spite of all official brain washing—that the British armory of guided weapons is bare and empty; that fighter airplanes have just become operational which, although designed to fight with the aid of guided missiles, had to be hastily armed with guns instead, because of the blast effect for which ill provision had been made; that the Minister was unable to say when British air-to-air guided missiles would become available; that there are no ballistic air-to-air missiles—as operational in all modern fighters of the great powers; that for *one* guided missile type production orders were being given, while unspecified other missile types were stated to be suf-

ficiently progressed for an early consideration of eventual production orders; and that a few American missile types were about to be bought off the United States production.

Such disclosure about the mighty British effort in guided weapons is, of course, not encouraging, and the only comforting aspect is that it has been made public instead of remaining an official "secret" shared only with our potential enemies in the east. To all appearances the effort by more than 100 top-rate firms and numerous research establishments plus a gigantic Ministry of Supply with enormous powers and in possession of all the German weapon work seems practically wasted, constituting some type of official development bankruptcy.

How could this come to pass?

No one can maintain that research workers and technicians in this country are unable to cope with such development, or that the facilities were inadequate. Neither has the industry been unwilling to cooperate. In fact the development orders have been very good business all around.

To attempt to analyze the causes, experience must, of course, be evaluated from fields which are less closely sheltered from critical eyes than guided weapons.

The major cause is, no doubt, the centralization and monopolization of all research and development in the Ministry of Supply. The tendency of strictest centralization—under the pretense of rationalization and economy—became very strong in the postwar years. Under political pressure it has led, among other things, to stifling initiative in research and to subjugate the inner operation of research establishments to the whim and will of incompetent bureaucrats. In addition, it gradually transformed the aeronautical industry into a state of immense Woolwich Arsenal, bringing it closer to the ideal of nationalization.

Monopolies of this type are particularly ill at ease where an all-out development effort is required in a sphere of technical complexity beset with difficult research problems. Such development can be approached only on a broad basis, often with duplicated efforts in a competitive spirit, and giving a free hand to the inventive spirit, yet leading to enthusiastic collaboration—as happened with the British gas turbine development—and to unimpeded exchange of information.

To put such a monopoly into the hands of bureaucrats accustomed to sitting in committees, to decide upon the strength of precedents, rules, and directives, and to shirk responsibility in general, was asking for trouble in guided missile development.

At the time when atomic energy was, by necessity, transferred to an efficient organization with capability and freedom to deal with it, it would have been proper to liberate and to decentralize, too, the development of guided weapons. Research and engineering progress are simply not compatible with administrative bureaucracy and should not be made toys of it.

Another cause is the sore problem of secrecy and security. Weapons of this type incorporate things the knowledge of which would be precious for the enemy. It would be criminal to suggest that such vital secrecy be dropped. When it happens over and over again that just such secrets, details on guidance or homing, and on performance are leaking out and can even be read in print in foreign papers; while an enormous apparatus of security men and crazy security precautions is hindering all development work on guided weapons and pestering all concerned with it, something must be basically wrong with the approach to the matter. Here again a complete reorientation toward the basic need for secrecy is needed, unless those in power desire to confirm the suspicion that all this wall of security serves solely as a convenient cloak to shelter their mistakes and misfits.

Even in the United States, where much less restraint is being imposed, the harm done by excessive and stupid security measures to guided missile development is bitterly felt. This was aptly expressed by Wayne W. Parrish:

. . . . Security . . . vitally affects the very manufacturing industry which has been made responsible for designing and producing missiles. The truth is that unnecessary security restrictions are actually throttling technical development and progress. . . . Missile engineers have to work individually in a vacuum with very limited information and without even the knowledge of how a component operates in a missile system with relation to other units. . . . Basic information about the over-all system—a necessity to good design—is being withheld. . . . Even the timing is sorely affected by security. . . . With component manufacturers in the dark, it is no wonder that progress has been retarded. . . . Security is serving as a blockade to the interchange of technical information. . . . ("American Aviation," 28 October 1954, page 27.)

There is little need to add to this outcry for commonsense, except stating that, as we are informed, conditions are worse in this country and that, as far as security antics are concerned, a perfect Alice in Wonderland is in operational existence. During the bleak days of 1938 a well-known Member of Parliament, now Minister of the Crown, was threatened with criminal prosecution when he drew the attention of the House to deficiencies in antiaircraft gun equipment. Today, responsible Ministers are not even allowed by security to answer in Parliament, for example, when air-to-air missiles will become operationally available.

Today, technical journals of repute bewail, as "deplorable, irresponsible, and potentially harmful," searching queries in Parliament into the serviceability of specific and known air defense equipment, quite forgetting that similar courageous critics such as C. G. Grey, N. Pemberton Billing, and Joynson-Hicks, with their frank disclosures and pungent questions in the midst of a war, caused a vitally necessary re-equipment and reorientation. Are periodicals today, too, run by security?

Another contributory cause to the poor crop in guided weapons has been the most unfortunate decision taken in 1945, to substitute model experimentation in place of piloted research flying to explore the sound barrier. At that time Great Britain had a very progressed research aircraft building, not dissimilar to later United States types. The rocket model experimentation was a washout. The models, fully expendable in spite of costing about 75,000 dollars each, frequently malfunctioned, due to insufficient preparation, and the research was grossly delayed. In the meantime research abroad went ahead by leaps and bounds.

Disastrous, too, proved the arrogance toward the German spadework which was available. The Americans took the wise step of securing a number of missile experts and setting them to work on the completion of their developments. Experimentation with German rockets and other missiles yielded an amazing amount of useful practical information on the handling of guided missiles, apart from most useful knowledge of the upper atmosphere. The Soviets did the same thing. The French development makes direct use of German weapon designers, and they have experimented well. This country did nothing.

Research and development will thrive best when unfettered. Thus all attempts at standardization should be curbed until a design reaches the prototype stage. Research must be as little directed as possible. The best progress is usually attained in a roundabout way. Design is an art and not a trade which can be regulated from a ministerial chair. Time is an

important factor, and undue delays to reach decisions on minor points of research or development work will easily kill the enthusiasm of capable technicians. The same is done when too much dead wood is carried along; there is plenty of it within the domain of guided weapons. Collaboration and the exchange of information should be promoted instead of being hampered by crazy security provisions. Security can neither develop nor produce any guided weapon, hence it should aid and safeguard but not interfere with the business of those who do the job. Security cannot defend this country from nuclear bombing, but those supplying the missiles will do it. Since their blunder in the cases of Fuchs, Nunn May, McClean, Burgess, and company, security has turned master instead of a servant.

Only two of the silly minor interferences with the industrial work are mentioned here. The Ministry has demanded that all drawings be made in third projection only. In this country, the cradle of engineering, and elsewhere—except the United States and, to some extent, Canada —first projection drawing has always been the rule. This dictate caused immense muddle and much heartburn in all drawing offices of the aeronautical industry, and thousands of drawings had to be revised. Moreover, the change has been and still is responsible for workshop mistakes, waste, and delay. To accommodate the United States, this rule was not necessary at all. All British designs which are adopted for American production have to undergo redesign in order to suit United States material specifications, tolerances, standards, and production methods. The same applies when a United States design is to be produced in this country.

Likewise, the Ministry of Supply insists on putting the clock back as far as the metric system is concerned. Before the war the metric system had been adopted by a number of engine manufacturers and by the electric and electronic industry. This sensible habit grew. For production in the United States not the slightest difficulty has been experienced, as the production of the French *Turboméca* gas turbines shows.

In the case of funds for research and development for ordnance purposes, the next fiscal year will see an increase of 2.3 percent over Fiscal 1955 for a total of almost $124 million. The maintenance of an adequate level of support for research and development projects in peacetime is wise and very important, because there is available the one priceless commodity—time.

With time available, research and development can follow an orderly process, wherein ideas are examined and considered from all angles before embarking on costly projects. Full advantage can be taken of modern processes of evaluation and simulation, and a sensible course can be plotted which offers the best possible chance of success.

On the other hand, when mobilization of the Armed Forces has been ordered and active military operations have started or are imminent, that priceless commodity, time, disappears.

Rear Admiral P. D. Stroop

Mass and Quality in the Soviet Doctrine of War

Translated and digested by the MILITARY REVIEW from an article by Kurt Dittmar in "Wehrkunde" (Germany) May 1955.

NEITHER the development nor the result of World War I had satisfied anyone, not even those who emerged from the struggle as nominal victors. Its long duration, the general state of exhaustion, and the far-reaching economic disorganization which followed it seemed to show that somehow things had gone wrongly. More and more the idea grew that in every respect this war had been conducted on an improper spiritual and organizational basis: armies of millions of men and the production of a war industry pushed to the limit had proved to be insufficient for obtaining a quick decision and, what was more, beyond a certain limit numerical increase in the size of armies and increased mass in combat means had resulted in a decrease rather than an increase in effectiveness.

Colonel General von Seeckt gave expression to a generally prevailing feeling in 1929 when he wrote in his book, *Gedanken eines Soldaten (Thoughts of a Soldier):*

Perhaps the principle of the mass army has run its course, and the passion for numbers is at an end. Mass becomes immovable; it cannot maneuver; it can only burden.

An army, whose size should be determined by its capacity for quick, decisive blows and, therefore, by the greatest possible degree of mobility, should, as an "operational army," form the core of the nation's armed forces—whereby Von Seeckt mentally included a strong air force. With this the quick decision was to be won and thus make a mobilization of the masses unnecessary and, from the standpoint of the weaker power, impossible. Von Seeckt did not reject the idea of a general mobilization, but this hastily trained militia was thought of as a source of replacements for the operational army and, in addition, for tasks of a defensive nature for the protection of the home soil.

Von Seeckt's organizational requirements influenced the thinking which governed during the 1930s, at least in that aspect that was fundamental to them —the necessity for balance between number and quality in the broadest sense of the word, for without quality, number becomes a mass "no longer capable of victory." The effort in the direction of superior numerical strength was, perhaps, not eradicated, but qualitative considerations limited its effects to a greater extent than before. The fact that in World War II the armies at first were not as large as the conscripted armies of World War I was a very natural development. In theory, at least, mass was looked on with distrust.

Soviet Thinking

In view of the ideological foundations of the Soviet system, it was only logical that mass as an instrument of military strength was less cheerfully renounced than perhaps elsewhere. The masses of workers and peasants, in the Bolshevist theory, were the real element that constituted the state. It was only logical if the same masses were the instruments of the defense of the "Fatherland of all workers." In addition, there existed the consciousness stemming from Russian history that the inexhaustible manpower of the giant empire was a point in the Soviet's favor that could not be matched by any other conceivable adversary.

It was Tukhachevski who, differing in various ways from the old Revolutionaries, looked upon partisan warfare—which had become legendary during the Civil War—

as the true solution, and who created a military organization and attempted to bring mass and quality into harmony with one another. Alongside an army with a relatively long service period, whose size was not too great for it to be provided with adequate technical equipment, was a militia whose purpose was to impart rapid training to the surplus manpower suitable for service. The agreement of this organization with Von Seeckt's ideas is obvious, but was perhaps more accidental than intentional. What with Von Seeckt was a fundamentally logical measure bore the mark of a temporary measure intended to circumvent a crisis in the Soviet Union. At the end of the 1930s, a short time before the outbreak of World War II, there was no militia in the Soviet Union.

With strong justification, if not without a bit of overpositiveness, certain authors have averred that the first campaigns of World War II—Germany's blitz campaigns, from the 18-day campaign in Poland, through the defeat of her western neighbors on down to the Balkan Campaign—were conducted and decided in accordance with Von Seeckt's fundamental ideas. This was that a relatively small but qualitatively superior operational army, with tanks and motorized formations, together with the Luftwaffe, sufficed for obtaining the decision, while the numerically stronger formations of inferior quality—infantry formations after the pattern of World War I—played only an inferior role or, on the enemy's side, proved ineffective.

The campaign against the Soviet Union in the summer and fall of 1941 presented very similar phenomena. What happened when winter set in, however much it might have been confirmed by former campaigns, appeared to bring the theory of the superiority of quality over mass, to nought. As a matter of fact, it was mass in which the Soviet masters took refuge in the face of the threatening defeat. Alongside the excellent, highly trained and equipped Far East Divisions whose decisive role must not be forgotten were formations of enormous numbers poorly armed—some of them not armed at all initially and only receiving their rifles on the battlefield—which bore all the marks of improvisation and of being final reserves. As we know, however, the German attack went to pieces against this wall.

One cannot, however, go so far as to believe that in this mighty winter battle at the turn of the year of 1941-42, the theory of the superiority of quality over mass met with fearful refutation. Qualitative superiority, as far as it was technically conditioned, no longer existed on the German side. Equipment losses and deterioration, lack of supplies, the autumn mud, and the devastating influence of a truly Siberian cold had basically altered all conditions. The ranks were reduced to tatters by the bloody losses they had suffered. However, what the command and troops still possessed in operational and tactical superiority was largely doomed to ineffectiveness by Hitler's inflexible attitude. Even if this first great winter battle ended with defeat, it nevertheless showed, just as Von Seeckt had said, that mass can defend the national territory, is also able to exert pressure in attack when greatly concentrated, but is not able to maneuver and thereby win a victory.

Soviet Mass

The fact remained that when mass was possessed of a strong willingness for combat and was held together by iron discipline, it could not be regarded as a *quantité négligeable*. This was what happened in the case of the Soviet conscripts. If it were possible to increase its combat strength by means of strong armament, it still would not become a "quality" army thereby. It would, however, become an effective combat instrument for limited missions. The Soviets, consequently, chose this

way: the masses of fighting men were complemented by a similar mass employment of matériel. Every man who fought on the Eastern Front will recall how the Soviet mass attacks were preceded by extremely powerful mortar fire and, at points where the Soviets were attempting to gain a decision, the attacks were accompanied by numerous *T-34* tanks. The longer one served there the more he observed that the deeply echeloned Soviet attack waves, with their frequently overwhelming effect, were characteristic of the Soviet offensives. He also saw that the wild hurricane of fire which preceded these attacks, as well as the tanks which thrust ahead into the depths of the field of battle, and the ground support planes which intervened in every phase of the battle even though their effects were not in harmony with their numbers, were also characteristic. The constantly increasing number of modern weapons appearing showed plainly that the Soviet mass was mobilized not only in the form of fighting men, but that it was large enough to accomplish enormous tasks in shops and factories, in depots, and in the transport service. That such a method would lead to fearful sacrifices of human life in the face of an adversary such as the German East Army was a matter that probably would have been of comparatively no interest to the Soviet command as long as the German losses were not materially less than its own. There was some room for doubt, however. If the Soviet Army wished to carry on more than one war of attrition and if it wished to achieve truly satisfactory results, it had to seek its decisions in "maneuver." It had to return to the method which in the prewar period was recognized and conducted as a definitely typical form of "proletarian warfare": the war of movement. For this, however, there were other requirements which the masses mobilized during 1941-42 did not possess even when this human mass was joined with mass of matériel. What was needed was quality.

That the achievement of this quality should involve no renunciation of mass, even after the defeats of the summer and fall of 1941 had wiped out a large part of the very best formations, was a certainty. To begin with, this formed the protective shield behind which the creation of the desired operational army could be achieved. Besides, mass in a limited sense had shown itself to be usable. And finally, what was more reasonable than that the Soviet command should keep the combat means it had in such abundance at its disposal? The way to handle the situation, its possibilities and necessities, was clearly indicated: they could do both things. At the same time, however, they had to devise a *modus operandi* and point of view that would fit both concepts and bridge the gap between the two contradictory factors.

Wartime Organization

The organizational basis for the accomplishment of such a feat was the creation of definitely elite formations sharply differing from the mass. These were formed of armored and mechanized units which are mobile and, in addition, of large artillery units—divisions and even corps. That peculiarity of the Soviet Army—the mass—formed the rifle divisions. One cannot fail to recall that such a development occurred on the German side during the war. In the German case, however, what was virtually a necessity—made still more acute by the politically based position of the SS forces—was, in the case of the Soviet command, a deliberately applied principle which, organizationally, would serve the interests of the elite forces and, operationally, govern the creation of points of main effort.

That we are faced here with a fundamental point will be clear if we consider the wartime organization of the Soviet

rifle divisions as they evolved during the war. They were purely infantry units in the literal sense of the word with a minimum of weapons organically belonging to them—a great many mortars but little artillery and almost no replacement and supply services. At least what they did have was so reduced that American sources have calculated that the ratio of actual fighting forces in such divisions was about 80 percent. A striking illustration of the unsuitability of these divisions for more than definite, narrowly limited missions is the fact that each of them possessed only one battalion of engineer forces of about 160 men and no bridge equipment.

The Soviet military literature also calls them the "Queen of the Battlefield." However, this theoretical recognition did not prevent their being looked upon as mass whose value lay in the massed manner of their operation and the consequent possibility of their reckless employment—without regard for losses. Thus it was regular procedure to leave rifle divisions engaged in combat in action until complete exhaustion and then, after final disengagement, to combine the remnants of several divisions, making a new one, just as if the "Queen of the Battlefield" were conceded the right to individuality and performance only in the sense of an ensemble, not as individual units. There was also the conversation with Marshal Zhukov reported by General Eisenhower, in which the latter heard, with amazement, the Russian state that minefields should be no obstacle to attacking infantry and that losses occurring were taken as a matter of course.

Particularly illustrative of the low evaluation of the infantry formations is the story of the creation of the previously mentioned large artillery units. It is not the fact of their creation that is significant for it was only logical that a large artillery arm should be created embracing all the artillery that was not needed by the divisions. What is more significant is that the first steps toward the formation of large artillery units were taken, not at a time when there was a superfluity of this weapon, but at a time of pronounced scarcity, immediately after the heavy losses in 1941. At that time, Marshal Voroshilov proposed taking half of the organic artillery away from the rifle divisions and creating fully autonomous artillery divisions with it.

Two objectives were revealed early in a positive manner as being the chief concern of the Soviet Army command: first, the attainment of mass which it could not and did not wish to renounce and which was to retain only enough combat strength to satisfy the limited missions expected of it without, however, hindering the formation of a quality army; and second, the formation of overwhelming points of principal effort whenever and wherever an attack aiming at a decision was to be made —an idea which definitely influenced the subsequent course of the war. The collaboration of mass and quality was raised to the status of a fundamental precept, not only in wartime practice but also, cast in the form of generally binding principles, in postwar doctrine. If we regard the rifle divisions as the answer to the problem of the creation of a mass element, which is entirely in accordance with the Soviet view, then to them, specifically, must be given the credit for the stubborn resistance which first made possible the creation of a sufficient number of formations for use at points of main effort and, in the latter stages of the war, formed the veil behind which the concentration of the assault units was accomplished. The situation in Stalingrad before the beginning of the great Soviet offensive is an impressive example of mass and quality.

With these cover missions, we touch on only a few of the ways in which mass may be used—missions which, according to Soviet concepts, are adapted to it. Its

second mission was to serve as a battering-ram ahead of the tanks and motorized formations destined to pour through the gap made by it in the enemy's position. It was on these occasions that the Soviet command not only consented to a grandiose expenditure of men but accepted it as a principle—the same command which, in the case of its elite formations, operated more carefully and, when circumstances permitted, operated very savingly.

Colonel General von Seeckt, in connection with the fact of the incapability of the mass to maneuver, said that in the contest between mass and matériel, the latter will always be the victor; that man, who forms the mass, must always be the vanquished. In spite of all their unscrupulousness, the Soviets never definitely exposed their masses to any such contest. They avoided such a contest for the reason that they used it in those places where they strove for a decision; because they thought in the same terms of concentrated matériel effects as of the mass employment of living combat forces. Marshal Voroshilov characterizes the operations of 1944 as "colossal and massive and expertly massed combat matériel in the necessary directions." The Soviet publication, *General Tactics*, says, "It is necessary to concentrate one's means of manpower and firepower, securing decisive superiority over the enemy," in which connection, the sequence—first, concentration of fire, then the massing of combatants—merits consideration.

To what extent the requirement of fire concentration was taken into consideration during World War II is shown by a few figures: While at Stalingrad, about 480 guns per mile of attack front were in action, there were 1,072 per mile in the Battle of Berlin. The American Colonel Ely calculates that the numerical ratio of the artillery in the composition of the large units amounted to at least 35 percent of the total strength, a figure which not only shows the decrease in manpower through the attrition of the infantry but also the steady increase in firepower.

The other branches of the service which heavily involve the use of matériel present a similar growth. Anglo-Saxon sources give a tank engagement of 40 tanks per mile of attack front at Stalingrad, increasing to an alleged total of 6,300 in the Battle of Berlin. Also, the employment of the air force is entirely in conformity with the law of massed employment at the decisive place and for the length of time it takes to fulfill the basic mission: break through the entire depth of the enemy defense system. An idea of this massed employment may be gained from the figures given by the Soviets of the number of aircraft employed at Berlin: 4,000 to 5,000 according to Western observers; 8,400 according to the Soviets.

In connection with this, there is no question that the Soviets had no hesitation in employing completely outmoded aircraft for obtaining the greatest possible concentration. Nothing can better illustrate the Soviet striving after mass, at any cost, than this way of taking no account of substandard quality in their effort to attain numerical superiority if an advantage, even for a given moment only, would be gained by it.

This Soviet logic, pursued to an extreme in their quest for superiority in point of men and combat matériel, finds its counterpart in the principle clearly observed by them, in committing this superiority in as unified a form as possible—not always, and not even preferably, with complete spatial concentration but, rather, in the sense of several reciprocally complementary operations in the same direction. It would be difficult, in the principles applicable in this case, to see any fundamental difference in comparison with those followed with convincing success on the German side in the early campaigns of World War II and which proved satis-

factory as long as freedom of initiative was on our side.

Conclusion

To how great an extent during the last years of the war, and in correct estimation of Hitler's rigidity of procedure, the Soviet command was certain that the initiative would practically always be on its side is apparent from the following: The Soviet regulations, even in the prewar period, had named a superiority of from 2 to 3 to 1, as the desirable prerequisite for an offensive with a decisive aim. During the war this need for numerical caution increased. A superiority of 3 to 1, even of 6 to 1 in the direction of main effort, became a theoretical requirement and in no case was the ratio to be much less than that required by theory. It is obvious that even for the Soviets such concentrations required time which an adversary, who was also active, would certainly not have given them in every case. Moreover, they possessed security from surprises—a situation conceivable only in the case of an adversary fighting on a constantly growing front and, therefore, to a large extent devoid of both tactical and operational reserves.

All things considered, we must confess that, in view of the situation on the German side, and the controlling circumstances on both sides, it can only be said that the Soviet command made effective use of the forces and means it possessed in abundance. It permitted no *embarras de richesse* to occur, at least in the realm of matériel, and eliminated the ever-existing discrepancy between quality and mass by means of the decisive use of both. Technically highly equipped elite units and primitively armed mass were both, equally, instruments of military success for it. It is logical to believe that in the future, recourse to mass as a possibility in time of crisis will again be an integrating component of the Soviet military organization.

A very particular thought merits our attention: The employment of mass in war, not only in the plants of war industry but especially on the field of battle, is not only a matter of military expediency but to at least a like extent, a tenet of their ideology. Only the Soviet state, asserts the doctrine, can be so sure of its masses that it can unhesitatingly provide them with arms for the defense of the home soil. Capitalistic states, so it asserts, are not able to do this for political reasons. Thus it is natural that every military organization of a non-Communist country which openly and as a matter of principle is unwilling to consider the total exhaustion of its national potential—for instance by refusal to institute universal compulsory military service—gives the Soviet Union the impression of fundamental and internal weakness. We cannot lightly view the political results of such appraisal.

The Army is constantly aware of its responsibility to prepare itself to achieve victory in battle. It is being equipped with the latest in modern weapons so that it can, if need be, fight any kind of war, atomic or nonatomic, wherever it may be called upon to defend our Nation's interests. It is constantly striving to attain greater combat effectiveness through advanced tactics and more rigorous training. And it believes firmly that the most important element in war is man himself.

General Charles L. Bolte, Retired

Cities as Battlefields

Digested by the MILITARY REVIEW from an article by J. M. Spaight in "Air Power" (Great Britain) April 1955.

THE cities became battlefields in World War II. In World War I they had been the scene of some small encounters. In the second many of the bloodiest engagements of the war were staged in and over them. At Hamburg, Dresden, Tokyo, Hiroshima, and Nagasaki the death roll was as great or greater than that of any of the land battles. In these five cities alone about 400,000 people lay dead when the storm had passed. The count in a new war may be a more grievous one still. Cities of a million inhabitants or more may disappear from the earth with every living soul in them.

To those of us who have been students of airpower since its earliest days this grim tale of past slaughter and forecast of worse to come has been a profound disappointment. We have always held that its function is to disarm, to destroy the weapons of war and the means of making war, not to kill men—and women and children. The air arm is inherently the least homicidal of the arms of war. It seems to be in danger of becoming the most homicidal.

The new weapons of mass destruction which are now available will be capable of causing human casualties far in excess of those suffered in any of the battles of World Wars I and II. If they are used by the air arms, those arms will be partners in a tragedy which surpasses imagination. Tamerlane and Genghis Khan will have been outclassed. Mass slaughter on a scale never witnessed on this earth will be seen if great centers of population are attacked with the new weapons from the air.

It is time to call a halt. Airpower has started on a wrong road with a bad companion. Its association with nuclear weapons, if it uses them to bomb towns, may be a disastrous association for it. In time, one cannot doubt, those weapons will be prohibited. In the meantime, could not an installment, so to speak, of the prohibition be accepted and the use of them against centers of population be dropped provisionally? That would be a first step back to the right road. Airpower could take it without sacrificing any of its military effectiveness. It has far better objectives to attack. Cities are actually unprofitable targets. The Soviets might fight on even if Moscow and Leningrad were atomized. They could fight no more if the Caucasian oil region were turned into a desert.

The argument for attacking towns is that, because the effect would be so catastrophic, it will avert war. It is for that reason that, as an American writer has said, the atom bomb has been "almost deified" in the United States. "Some people have gone so far as to set it upon an altar and bow down to it as the existing symbol of divine protection." Well and good; but what if it does not avert war? If it does not, we can only atomize the enemy's towns if he atomizes ours. That will be our "defense." We shall have armies, too, we and our allies, armies of many divisions and many nationalities, but what will be the value of them when the ever-leaping nuclear war is under way? An acute observer has asked:

What will a European army be worth if the peoples who are supposed to man it see themselves as sure candidates for incineration before or after United States retaliatory power has incinerated the Soviet population?

That question goes to the root of the matter. What is in contemplation is not

in fact defense; it is retaliation; and these two things are not the same. Retaliation is the old *lex talionis*. Defense is, or should be, protection from the stroke which has retaliation as its sequel.

Strange Concept

We of the free world all live, more or less, in welfare states today. In such a state the government exists for the sake of the community. To safeguard the community's welfare it is essential that the country's independence and free institutions should be preserved, and that must always be its rulers' first consideration. Of hardly secondary importance must be the protection of the people for whose sake they are responsible and of whom they are the guardians. "Who dies if England lives?" That is a great and noble thought, but it cannot be pressed to extremes. It will hold as an exhortation to the men and women who are free agents and able to take their share in the labors and risks of total war. They may be said to have counted the cost and accepted the challenge.

What of the countless thousands who are entirely, and necessarily, passive? What, above all, of the children? "Sob stuff," the cynics growl when one speaks of children in such a setting. It is not sob stuff here. It is hard realism. Any nation that has regard for its future would wish to protect them: children, and nursing mothers, "useless mouths," as useless as the old, the infirm, and helpless, yet precious in their promise. There is no justifiable conception of defense which would exclude them from its scope. Defense which puts them in the front of the battle, exposes them to annihilation in the interest, forsooth, of "national security," is a travesty of defense. They are the nation of tomorrow. Their survival is essential to the nation's survival. Tens of thousands of them are to be found in any large city, and there an overwhelming blow might fall on them before any scheme of evacuation could be put into operation. That is "defense," if you please, in these enlightened days.

Peace Through Terror

The main argument for such a strategy is that, because unimaginable horror would come if war came, war will not come. The horror, therefore, will not come. It is a new and strange approach to the goal of world peace. The foundation of it is terror. Fear was one of the four ills from which mankind was to be set free in President Franklin D. Roosevelt's vision of the better age to come. In the new evangel that particular freedom finds no place. Rather, the denial of it is at the heart of the new cult. Fear, and fear alone, will save humanity from the agelong plague of international strife. Nations will live under a reign of terror, and airpower will be the agent of the terror and the dispenser of it.

Airpower in Danger

Has airpower counted the cost? Does it want to be the instrument of terror? It should remember what is at stake, for that is nothing less than its own future. Already it has its enemies. They are not all faddists and pacifists, nor are they confined to "that strange little coterie of reactionaries and muddleheaded sentimentalists who regard the bomb as a slightly indecent and certainly immoral weapon," to quote Lord Tedder's words in the House of Lords on 17 March 1954. They are, many of them, able and distinguished officers of the services. There is no reason to think that they are all hidebound or suffering from occupational obsessions. The repugnance to the use of nuclear weapons against centers of population is not a peculiar notion of theirs. It is widespread. As *The Times* said in a lead article on 31 July 1954, "There is a strong cleavage of opinion about the practical value and moral justification of atomic bombing against strategic objectives."

A little earlier the same newspaper stated in a leader on 10 June 1954 that bombing which is capable of deterring global aggression may have the effect of increasing the frequency of local wars. "Is it impossible," the newspaper asked, "that in the process they [the bombers] may end by sounding the knell of air attack altogether, even of the tactical kind?" Soon, it said, almost every aircraft will be potentially the carrier of a weapon of mass destruction, and the use of such weapons may result in the converting of local wars into global conflicts. Fear of such a result may lead to the exclusion of air forces from the Korea type war, until they are "relegated one day to the role of Household troops."

"What an absurd idea," some will say. Is it really so absurd? Those who think that it is should remember what happened in 1933, when 9.5 million people in this country answered "Yes" in the notorious Peace Ballot to the question: "Are you in favor of an all-around abolition of national military and naval aircraft by international agreement?" A little over 1.5 million voted "No." They should remember, too, that a year or so before then an agreement to ban bombing altogether was discussed and very nearly accepted at a full-scale international conference. The wind may set in the same quarter again. The case for such a ban will be stronger if bombers are to use the new arms of mass destruction. Those of us who opposed the ban then, and would still oppose it if it applied to conventional weapons, will find it harder to reconcile opposition with our consciences if it means perpetuation of the use of the new weapons of terror. All those who are true friends of airpower would do well to remember the old and still valid advice about the half loaf. It will be wiser to rest content with the kind of bombing which need not outrage humanity.

There are some who would go further and would ban all strategic bombing of populated centers. "I believe," Sir George Thomson has said, "that we ought not to bomb cities, either by atomic bombs, or by ordinary explosives, or by incendiaries." If we did not, he thinks, the Soviets would also refrain from bombing cities. So, probably, would other belligerents. The result would be the *de facto* neutralization of cities. The question would remain, however, whether circumstances might not make imperative the bombing of a particularly important military objective within a city's bounds, and if the attack were made with precision, as it could be if ordinary bombs were used, the belligerent ordering the attack could show a case for it on the score of military necessity. There could be no precision if nuclear weapons were used. Bombing with them cannot but be indiscriminate. Any attempt to bomb individual targets is out of the question.

It would be wiser, for the present, to limit any ban upon attacks on towns to atomic attacks and not to extend it to ordinary bombing. That is indeed the suggestion of a distinguished atomic scientist, Dr. P. E. Hodgson; his proposal is that "all nations pledge themselves never to use it [the atom bomb] on inhabited cities." Another, an American, has proposed that the first use of atom or hydrogen bombs against civilian populations should be renounced altogether, although they could still be dropped on armies, navies, airfields, transportation facilities, and oil wells. It would probably suffice if, in the event of war, each belligerent issued a disclaimer of any intention to use atom bombs against towns, more or less on the lines of the disclaimers by the belligerents in September 1939 of an intention to use poison gas. The guarantee for the observance of this declaration would be the manifest advantage to each side of strict compliance with it. It would be observed not only for humanitarian reasons but because far more profitable targets could

be found elsewhere. Mr. Churchill as long ago as 16 November 1937 in the House of Commons said, and what he said then is as true today:

I believe that there is no doubt that if one side in an equal war endeavors to cow and kill the civil population, and the other attacks steadily the military objectives, the focal points on which the opponent's war-making capacity depends, victory will come to the side, all other things being equal, which avoids the horror of making war on the helpless and the weak.

It is possible, indeed, that without any undertaking belligerents may abstain from bombing one another's cities.

A tacit convention may establish itself, founded on the reciprocal interest of the adversaries in avoiding certain destructions such as those of populous centers.

Attack on Morale

The possible objections to such a plan are two; neither is, if examined, of very much weight. The first is that it would deprive the belligerent who was stronger in the air and in stocks of the new weapons of a definite military advantage, namely, his power to weaken his enemy's morale in the most effective way, which would be by attacking his large centers of population. It might, indeed, be possible, some think, to decide a war in record time in such a way. There is here a revival of Douhet's doctrine, that we should "hammer the nation itself to make it give in." He said, "It will be an inhuman, an atrocious performance, but these are the facts." Are they in truth the facts? Douhet's theories were discredited to a large extent in World War II. The country which has the bigger airfleet and the bigger stockpile of bombs may be less favorably situated and more vulnerable than the enemy country. The latter may have the advantage of great spaces and widely dispersed agglomerations. And the enemy might strike first. Much would depend on which side "beats the other to it." In any case, even a small number of the new weapons might cause appalling damage. As Mr. Churchill said in the House of Commons on 28 March 1950, "The United States might have 1,000 atom bombs and Russia 50, but if we got those 50, fearful experiences far beyond anything we had ever endured would be our lot."

War in Enemy Air

The other possible objection referred to here is that the threat to the cities has the effect of tying down substantial defensive forces in the homeland for its protection, that it keeps the air war over the enemy country, and that it relieves our own country *pro tanto* by making the enemy too busy in defending his own to have the time or the forces to attack us at home. That certainly happened in World War II. Germany had to devote a disproportionate share of her aeronautical production to building fighters and had less available for building bombers, and we benefited accordingly. In 1939 about 43 percent of the Luftwaffe was composed of fighters; in 1944 the figure had become 66 percent. Abstention from atomic raids on towns will not, however, make much difference in this respect. The towns, or rather military objectives in them, will still be liable to be attacked with conventional bombs, and will have to be defended, as in World War II, in the air. To that limited extent they will be battlefields still. More air forces will be needed to protect the many nonurban objectives which might be attacked with atom or other bombs. Such objectives will be, as already stated, the most paying and most probable objectives of all, and will, therefore, have to be powerfully defended.

The towns may benefit, too, from another development. This is the application of

nuclear weapons to tactical operations. Such weapons will be needed in great quantities by the Western allies if, as may well happen, the next war takes the form of a clash between the massive armies of the East and the smaller but more powerfully equipped forces of the West. It was that situation which, in all probability, Field Marshal Montgomery had in mind when he made his much criticized statement in his address at the Royal United Service Institution on 21 October 1954 when he said that Supreme Headquarters Allied Powers Europe (SHAPE) was planning to use atomic weapons for defense. He cannot have been referring to strategic use of them, for that is a question for political decisions by the several governments of the NATO countries. He must have been referring to tactical use, and that this was so is supported by what his chief, General Gruenther, said in an address at County Hall in London on 5 April 1954:

Our basic strategy is to make a shield so strong that it requires the enemy to concentrate if he is going to penetrate, and when he concentrates we use the devastating power of the atomic bomb.

There is, in fact, a good deal of evidence of a shift of emphasis from the strategic to the tactical use of the new weapons. It is to be seen in the character of the atomic tests carried out by the United States in Nevada and at Eniwetok in 1951-53. Mr. Gordon Dean, the former Chairman of the United States Atomic Energy Commission, has drawn attention to this development and the implications of it. He has said:

The mass killing of millions of women and children and the fear of retaliation in kind is, in my view, what causes most people to be more revolted and horrified by the thought of atomic warfare than they apparently are by the thought of warfare per se. But none of these things would appear to apply to the use of atomic weapons against troops.

Elimination of Nuclear Weapons

The plan here suggested, that nuclear weapons should not be used in attacks on cities, is, it must be emphasized, only an ad interim one. It would no longer be needed if such weapons were eliminated from national armaments in accordance with the decision of the General Assembly of the United Nations in January 1946. There are some who would say: "Oh, the whole situation has changed since then. Nuclear weapons have come to stay. They have established themselves and cannot now be prohibited." Views of this type are frequently expressed by spokesmen of the United States Air Force. A statement of policy drawn up by the United States Air Force Association, for instance, at its meeting in Omaha, Nebraska, on 21 August 1954 declared *inter alia*:

We believe that our national policy must clearly define nuclear weapons as legitimate and conventional instruments for resisting aggression, or the Air Force's temporary advantage in weapons technology will continue to be seriously compromised.

That the reference to resistance to aggression was not meant to be tactical only was shown by the further statement:

We believe it is the direct interest of our national survival to attack the basic sources of military strength behind any future Communist aggression.

It would be difficult, however, for the United Nations now to reverse the decision which they reached and solemnly put on record in 1946, and that that decision still stands has been affirmed by British and United States statesmen. Meanwhile, the suggestion made in this article may be worthy of consideration. It would not be put forward if it were calculated, in the

author's opinion, to clip the wings of airpower. On the contrary, its effect should be to make the air arm more potentially decisive than ever; and it should serve our broad national interest too. There is no doubt that our towns are more vulnerable than those of our foreseeable enemy. We are less favorably situated in this respect than the Soviets, and for that matter than the Americans. It has been shrewdly said:

On balance the military use of the atomic bomb would in a short decisive struggle be more favorable to the Soviet Union, or to the United States of America, which have vast areas for dispersal, than it would be to countries with industries and populations more densely concentrated. We are one of these.

At the meeting in Paris of the Foreign and Defense Ministers of the 14 countries of the Atlantic alliance on 17-18 December 1954, it was agreed that whether nuclear weapons should be used in the event of war was a matter for decision by the NATO governments and not for SHAPE. There would be nothing to prevent those governments from ruling that such weapons should not be used against towns. The enemy would follow this lead in all probability. It is unlikely that the United States-based Strategic Air Force would take a different line. As Mr. Dulles pointed out at his press conference on 21 December 1954, the question whether atomic weapons should be used was one for decision by the civil and not the military authorities in the United States as in other countries, and his statement indicated that the decision would have regard to the great difference which he said existed between strategical and tactical use.

The Crisis of the Divisional System

Translated and digested by the MILITARY REVIEW from an article by F. O. Miksche in "Wehrkunde" (Germany) June 1955.

AS WARFARE becomes more technical, it becomes more and more difficult to estimate actual weapon effects since the unknown magnitudes involved continually increase. The numerical superiority of one side can easily be counterbalanced by an unknown qualitative advantage on the other, or both calculations may prove to be of no material consequence as the result of some factor that has not been sufficiently taken into account. In comparison with the uncertainty of the present-day situation, military planning in the past was a simple matter. Today, we are mounted on a steed of unknown breed that as yet has not attempted to run.

At the present time, the Western staffs are counting on a war of movement. What will happen, however, when the fronts become bogged down again? It does not seem impossible that for the third time we might take the field with a tactical doctrine, an organization, and equipment which do not correspond to the requirements of the battles of the future.

Even for General Scharnhorst, the Army was not a strictly technical organization that was to be regarded solely from the point of view of its mechanical function. Let us beware, therefore, of excessive technical one-sidedness on the part of our professional military as is frequently found in the United States today. Modern military commanders often know more about technical matters than about strategy and tactics. Modern technique extinguishes what Marshal Saxe designated as sublime and what we, today, would designate as the psychological or abstract side of warfare.

There is no doubt that atomic warfare will considerably alter the structure of

armies. It would be unwise to conclude from this that atomic weapons will lessen the importance of ground forces or even make them quite unnecessary. That the decision on the field of battle can only be achieved by the collaboration of men and machines, although the latter, because of their power of destruction, may appear to be the dominant factor, becomes especially obvious when we imagine an adversary who builds up his military system on the basis of both factors—on the most effective possible employment of troops coupled with the most effective possible employment of machines.

In defense as well as in offensive action, regardless of how great the firepower of the attacker may be, control of time and space is always a prerequisite of success. Firepower alone does not suffice. Frequently, operational or tactical situations will arise in which the actual occupation of an area is necessary which requires many more forces than we are wont to imagine today. For with firepower alone, an area can neither be conquered or held. It is, therefore, also erroneous to estimate the combat worth of forces exclusively on the basis of their firepower. This possesses true worth only when joined with the possibility of physical seizure of the terrain in question.

Motorization does not render armies as omnipresent as is really necessary. Korea has given us some rather valuable tips in this respect. Although United States aircraft controlled the air, the Chinese succeeded with their extremely primitive methods of transportation in conducting offensive operations. In reporting on United States combat aviation in Korea General Stratemeyer said:

On the Communist front, the combatant is actually able to satisfy all his needs with a cartridge belt and a bowl of rice. . . . The enemy is organized in depth, makes use of all possible natural covers, is well entrenched, and extremely well camouflaged.

The belief in the possibility of being able to obtain a decision in a campaign with small, although highly mobile, forces supported by atomic weapons is an extremely dangerous and erroneous belief. Doubts relative to the truth of this assertion are again silenced by the happenings in Korea. What is the use of deep breakthroughs by mechanized armies when the areas to their rear are not secured? An empty area quickly forms back of the armored forces into which enemy forces pour as into the wake behind a moving ship. It can, therefore, easily happen that mechanized formations attempting to encircle their adversary are, themselves, trapped by masses of infantry.

In spite of their superiority, allied aviation in Korea was never able to maintain an effective watch over the rear areas of their adversary or the areas between their separately operating attack divisions. Thus light Chinese infantry formations were continually infiltrating, being less bound to the roads than our large motorized formations.

Even in a European theater of war, infiltration conducted on a large scale would not be impossible by small combat infantry groups slowly working their way forward over the terrain from cover to cover and place to place providing camouflage. Striving as they would be to find worthwhile targets between the advancing motorized forces for ensuring domination of the intervening areas, such a tactical procedure could not be easily mastered by atomic weapons. The situation would be entirely different if the intervals between the advancing armored forces were also actually filled by a continuous front formed of light infantry. In such a case, large-scale infiltration would hardly be possible for the enemy, for he would also be forced to concentrate his forces and, as a result,

would present a worthwhile target for atomic weapons.

In any case, considerable infantry forces will always be necessary for the flank and rear protection of mechanized formations. Without taking this precautionary measure, recklessly advancing armored formations could all too easily fall victim to their boldness. Cut off from their supply base by atomic bombardment, surrounded by masses of enemy infantry, they would resemble a badly wounded bear baited by dogs: the dogs attack him from all sides and quickly back away, however, as long as the bear continues to defend himself by lashing out with his paws. Gradually the bear's strength ebbs. The more noticeable his exhaustion is, the more aggressive the dogs become—until they finally bring him down.

Infantry Action

Under certain conditions, one being the result of extreme, enforced dispersion, infantry action may assume forms that are best designated as "real guerrilla battles." Infantry allows the armored spearhead to pass through it—keeping out of sight of the tanks—but immediately plunges ahead when the tanks roll on. Atomic harassing fire directed against their rear communications, combined with regular guerrilla tactics such as this, can considerably weaken mechanized forces before they have reached their decisive operational objective.

Instead of furthering the development of the armored arm, an atomic war could easily lead to the very opposite and bring increased importance to the infantry. As paradoxical as this may sound, it could definitely happen that development would lead to simplification—to the use of easily manufactured, cheap, and robust matériel, and to simpler but more reliable tactical forms.

Expert riflemen or machinegunners on watch in deep trenches, and easily camouflaged weapons of the bazooka or trench mortar type could, where it was possible to employ them, prove more practical than the modern and expensive equipment whose effectiveness, in any case, depends far too much on the frictionless functioning of its complicated auxiliary apparatus. It would seem that the efficacy deriving from the mechanization of armies had already passed its zenith. Further equipment with motorized means could hardly increase its mobility any more but, because of the still greater need for supplies and service personnel, could slow it down. The situation reminds one of those gigantic prehistoric monsters which were so large that they could hardly move and as a result they easily fell prey to their smaller but much more adroit adversaries. Because they were so large, however, they were obliged to eat from morning to night in order to keep themselves alive. Finally, they could think of only one thing: "How can I sustain myself?"

Such complex and cumbersome toys as the divisions of the Atlantic Powers hardly meet the requirements of atomic warfare and, in addition to this, exceed the financial possibilities of European states.

In the United States Army the forces needed for one division are estimated at 68,000 men. Eighteen thousand of these form the actual division, while the remaining 50,000 ensure the combat effectiveness of the division on the front, through the medium of the rear services. However, even of the 18,000-man division, only about half, as will be shown, belong to the combat forces. In the British Army it is estimated that only 50,000 men are needed for the division; in the German Army it was only 23,000 without the forces assigned for the combat of partisans. The same number applied to the Soviet Army which was due to the fact that the Soviet infantry divisions consisted of only 10,300 men.

The result was that Germany, during

the course of the 5 years of war, was able to organize 325 divisions from a population of about 85 million; the Soviet Union with her population of 200 million about 550 divisions, while the United States with 140 million organized only 97 divisions. The maintenance of these units costs the American taxpayers in peacetime 300 million dollars per year per division. European divisions of equal firepower cost between 69 and 80 million dollars—which is still too high—while lighter divisions after the pattern of the Soviets and their satellites can be maintained for 20 to 30 million dollars per year. In the matter of supplies, a division of the United States type uses from 600 to 800 tons per day of combat, a quantity which in view of the difficulties that are to be expected in an atomic war could not be carried into the combat zone by motor vehicles or aircraft. In comparison a Soviet division requires from 150 to 200 tons daily and is able to get along with even less. In spite of the high military budget, the standing Army of the United States consists of about 25 divisions as contrasted with 180 divisions in the case of the Soviets and 80 in the case of her European satellites.

It is impossible, however, to organize the available manpower in Europe on the present basis which we have described. At one time in the past, 10 percent of the population was calculated as suitable for military duty, while often a million inhabitants furnished one division. In World War II France mobilized approximately 100 divisions, Belgium 18, and the Netherlands about 10. Today, Belgium could hardly form more than 3 or 4 divisions, the Netherlands perhaps 2 or 3, and France only 15 to 20. In France there are only about 3 million men suitable for military service and even if we estimate 60,000 men as necessary for one division, this amounts to hardly a million for 15 divisions. What will the other 2 million do in case of war? All this leads to the uncomfortable conclusion that if this present system is maintained, it would be impossible to utilize the available defensive strength of the Atlantic states for financial reasons alone.

The picture becomes still darker when we look closely into the structure of the type of division prevailing today. Is it really necessary for every lieutenant to have a jeep and every battalion an entire "general staff"? Was it not Moltke who spoke of the inflated staff as a sure sign of a poor army? Does simple field artillery really have need of all that highly complex apparatus to be able to fire? It is true that many modern pieces of apparatus border on the miraculous, but that does not answer the question whether one can permit himself this luxury. Quite aside from the financial problem, it appears to be forgotten that an infantryman who is always transported quickly loses the ability to walk 30 miles in a day although that may easily become necessary someday. Well-trained infantry can, it is true, always be transported in motor vehicles, but it will not be possible to carry out rapid marches on foot with forces which are no longer accustomed to exertion. Wars are very seldom won by luxury armies. Viewed from the psychological point of view, much of the complex equipment without which we believe we could no longer make it, and which we even pride ourselves in, serves no other purpose in the final analysis than to harm the forces, since it affects adversely their discipline and physical stamina.

How did the Western armies get into this blind alley? It should have become clear that the divisional system originally introduced by Napoleon had slowly become obsolete. Since 1914 the infantry had been allotted more and newer heavy weapons, under the weight of which it is threatening to break down today. Not that the combat forces did not have need of all these heavy weapons such as machineguns, mortars,

antitank and antiaircraft guns. This is not a pertinent point in the present discussion. The error resides in the way and manner in which all these weapons have been fitted into the division. Originally the division was organized as a formation for the independent fulfillment of operational missions. That is, it was the lowest operational command unit. For a long time this has no longer been the case. As early as World War I the division was reinforced by auxiliary artillery. It was really not until World War II that the army corps became the smallest operational command unit within which tank and infantry divisions collaborated. This collaboration had to be reinforced by aviation.

Too Much

It is a fact that from the standpoint of organization the division has shown itself to be too "oversated" to be able to digest all its different allotted yet indispensable weapons. This would destroy its organic equilibrium. There has gradually developed a very serious internal disproportion in its structure. The need for ensuring the collaboration of the different arms and for bringing up the enormous quantities of ammunition and other supplies has so increased the proportion of the staffs and auxiliary services with respect to the combat forces that its entire structure is out of balance. Certain outgrowths, such as the insistence on comfort at the cost of practical necessities, have also operated in the same direction. This inflation of staffs, this doubling and tripling of the customary armament and corresponding auxiliary services has, in the final analysis, been at the cost of actual combat power. Otherwise stated: The more the infantry has been loaded down with heavy accompanying weapons, the more combatants have been drawn out of the front.

There is a great deal of talk, today, about the enormous firepower of the modern infantry division. Fire as a rule possesses actual worth only when complemented by mobility. We here arrive at the heart of the problem created by the present organization: fire and the ability to seize possession of terrain no longer bear the proper ratio to one another.

In a United States division 15 combat or service units are directly under the supervision of the staff—which certainly does not simplify the essential task of the latter. At first thought, the fact that the division consists of three regiments, each of these of a strength of 3,577 men, somewhat allays our apprehensions. Regiments such as these are really mixed brigades, so that the entire formation appears to be far stronger than what is usually understood under the concept of "division." This first impression, however, quickly changes when one carefully analyzes the brigades.

To be able to carry out missions in the framework of the division, one regiment with more than 2,500 men is entirely too cumbersome, while a strength of 3,577, on the other hand, is not sufficient for permitting this formation to operate independently. A brigade which is too large for tactical purposes and too small for operational purposes is neither fish nor fowl. This fact is not changed when the said formation is reinforced by other

Divisional staff and various services directly under command of the division	1,744
Artillery staff and auxiliary artillery services	1,223
Staffs of regiments, battalions, and companies	4,485
Staff of engineers and signal communication forces	324
Staff and auxiliary service of the tank battalion	126
	7,902

Figure 1.

arms, such as artillery or engineers. Although its firepower is increased thereby, its tactical mobility, especially in difficult terrain, remains the same. The same holds in regard to its ability to occupy. It is plainly apparent that in a division of the United States type there is a scarcity of riflemen.

Mobility

To make up for shock troops, of which there practically are none, a tank battalion is assigned to the division, and a tank company of its own to every regiment, a total of approximately 130 tanks. Is this equipment able, however, always and under all circumstances, to replace the rifleman? There is no doubt that 2,500 trucks and other motor vehicles impart great operational mobility to a division. As a matter of fact, there is one motor vehicle for every seven men, which gives a length of 100 miles to the march column of a division. How are these 2,500 motor vehicles to disappear suddenly under a smoke screen? Logically the question should also be asked: How, in spite of its many wheels, could such a formation escape from a powerful air attack? What would happen if the enemy not only attacked with the traditional rockets, napalm, and normal bombs, but also with atom bombs?

In any case operational mobility of this type will, rather, be classed as a characteristic which makes for reduction of maneuverability in open terrain. To permit such a division to assemble quickly in a sector of 10 to 15 miles wide, at least two routes are necessary. That would still be somehow possible in a country with a well-developed road network. It would be more difficult, in an area with a few poor roads, as in eastern Europe. Under the conditions which prevail there, several divisions would be forced to use one and the same road. This means delay in the assembly of the forces and their supplies, a slowing of advance which, perhaps, would lead to a complete halt.

Briefly stated: Our present system relies too much on movement which presupposes a good road network, the open terrain between the routes of march being neglected. In practice a considerably large percent of the heavy matériel can be employed only in the vicinity of main highways which can easily be cut by atomic attacks.

Thus in common with all other things, even motorization has its limits, not only from the financial standpoint, but also from the tactical. Just as a scarcity of motor vehicles limits the mobility of a formation, a superfluity of motor vehicles can make it cumbersome. It is much easier to provide an army with an abundance of motor vehicles than to find enough roads for them. It is still more difficult to camouflage the long march columns and to protect them, as well as important communication centers, from enemy air attacks. Besides, a division is not always on the march. What happens to the numerous and costly vehicles when the formation is in a position or the forces are resting?

	Division	Regiment	Battalion
Staffs and services (noncombatant)	46.4 percent	45.4 percent	31.2 percent
Engineers and signal communication troops (partly combatant)	6.6 percent		
Heavy weapons crews, drivers, etc. (firepower)	40.4 percent	43.8 percent	50.0 percent
Riflemen (occupational power)	6.6 percent	10.8 percent	18.8 percent

Figure 2.

The visible and quieting influence of the growing number of collective weapons, staffs, and auxiliary services on the actual combat worth of the formation is clearly evident from the figures for a division of the United States type with a strength of 18,705 men. (See Figure 1.)

These figures will, perhaps, be less surprising when one considers that 2,500 motor vehicles also require at least 2,500 drivers and at least 500 mechanics for their maintenance. The figures for a division and its separate parts show the relation between combatant and noncombatant forces. (See Figure 2.)

Conclusion

The striking power of an army gradually lessens when firepower, which is dependent on too many staffs and service organizations, reduces the possibility for operating in open terrain, and the capacity for the seizure of terrain. The division organized along the United States lines has a large head, an overly long tail, and between the two, a misshapen torso. Such a body naturally lacks balance. The presently employed method of motorization hampers the tactical mobility of an army. It may, it is true, increase its operational mobility, yet even this is questionable in an atomic war in which one can hardly run motor vehicles around as freely as formerly—motor vehicles which, moreover, continue to roll only as long as fuel can be brought to them. Only tactical flexibility coupled with speed produces true mobility, that is, adaptability to the manifold combat situations that occur on the field of battle. In its present form, motorization, with its massing of motor vehicles, hinders the effectiveness of the forces in battle.

Armies composed of such divisions are able to operate only against an adversary who is inferior in the air. Their chances of success would sink still lower if they were engaged against an enemy who also had atomic weapons at his disposal. It is very probable that their overstrained structure would suddenly collapse even in the early battles.

The Role of the General Staff Officer

Translated and digested by the MILITARY REVIEW from a speech made by Brigadier General H. Castello Branco, Brazilian Army, to the graduating class of the Brazilian Army Command and General Staff College.

THE value of your study in this College does not lie in the many things you did as students but in the many things you will do in the future. The graduation certificate that you will receive will have value if the performance of the duties assigned to you by this document is also valid. During the 3 years you have spent here you have set the example that the primacy of the military career can and must dominate the mind and the actions of the officer. You will have to retain this spirit and meet your new task with redoubled vigor. Your military energy and work can help to prevent discouragement among some, and stop others who have despaired from leaving the service.

This is not all, however. You must be assigned, immediately, to General Staff functions. It is said and rightfully so that a great deal of tact is required from staff officers. Do not believe, however, that you will need only commonsense to live and work with your commanders.

The military literature on this subject is vast and varied. I will only make use now of more recent remarks—those made by General Marshall and quoted by General Eisenhower—which have the mark of wisdom and experience of a modern leader.

These remarks are his confirmed opinion as to the officers who are suitable or unsuitable for staff duty. First, he considered unsuitable those who try to project themselves to obtain undue promotions. He despised not only those who feel the need of submitting all matters to the higher authority for consideration but also those who desire to do everything by themselves. He disliked the officer who considers a lack of manners as an expression of strong character. He avoided the meddlers and was irritated by those who often argued with their colleagues. He could not stand the pessimist, the one who does his best to draw a dark picture of the difficulties and who is distrustful of the means at his disposal to overcome these difficulties.

In addition to these judicious comments you have the experience acquired by many of you, sometimes easily and other times by difficult means. This proves that instead of using tact alone that it would be better if the officer be devoted to his career, expands his military knowledge, and develops his character.

The mastering of the professional duties ensures, in a large scale, the strengthening of the command, otherwise the chiefs would be surrounded by professional aridity.

Military knowledge will afford you the credentials of honesty and objectivity, a basis for you to be a useful and effective officer; therefore, do your best not to become a heavy burden in a headquarters, on a staff, or in an office. This happens to those unsuitable officers who are unaware of the fact that they must take care of their self-improvement.

In turn, character does not preclude the other required attributes, but rather it associates itself with them to form the structure of the military personality. This quality strengthens the staff officer's efficiency and thus he can operate better jointly with others. With the proper traits of character, working for the good of the service and for your superior as a representative of his office and not as an individual, you will be an efficient staff officer; an assistant to the commander but neither a boss in disguise nor a marionette; an indispensable liaison element and not a screen between the commander and his subordinates. If you have character, you will not be a conformist and you will be able to distinguish between adequate and inadequate performance of duty. Your character will be the basis, if necessary, of eliminating the individualism that gives birth to injustices and privileges which corrupt and demoralize the organization. This is true if you consider the requirements for a democratic army. These are not to destroy hierarchy nor to level different values. A democratic army is one which must practice a concept of the military life in which the human problem, among other relevant questions, is also a great problem of leadership.

The personality of the staff officer does not rest solely on this foundation. Remember, still, the great vigor you must possess to increase ceaselessly your professional knowledge and to broaden that knowledge as related to organization, tactics, and strategy. On the other hand, the staff officer is a reviser of existing thoughts and a creator of new ideas. Fight conservatism by accepting new ideas in order that you may avoid petrification, formalism, and routine. A military manual states that an officer must fear nothing, not even a new idea. Otherwise, his own mind becomes a vacuum having a traditionalistic basis and nothing positive. Therefore, do not hesitate; always look forward. Thus you will be in the right place at the proper time, ready for a new era.

If you are a member of the command with these qualities, you may be sure that you have also developed the essential qualities for important positions which you will surely occupy in the future.

BOOKS OF INTEREST TO THE MILITARY READER

ADMIRAL AMBASSADOR TO RUSSIA. By Admiral William H. Standley and Rear Admiral Arthur A. Ageton. 533 Pages. Henry Regnery Co., Chicago, Ill. $6.00.

BY LT COL WILLIS B. SCUDDER, *Arty*

In 1896 William H. Standley visited Vladivostok, as a member of the *USS Olympia* crew. He was a midshipman then and while that visit had its difficulties it was much happier than his later stay in that country from 1942-43, when he served as United States Ambassador to the Soviet Union.

Admiral Standley tells, in readable and interesting style, his version of incidents that arose during his stay in Moscow.

Of particular interest are the chapters dealing with the visits of the late Wendell Willkie and Joseph E. Davies (*Mission to Moscow*). Here the reader finds material which would provide the background for a Hollywood farce.

Possibly the greatest problem stated by Ambassador Standley was his lack of knowledge as to what his Government was planning or doing with reference to the Soviet Union. The book is replete with examples of improper coordination between various agencies of the United States Government, and it is this problem that eventually causes Ambassador Standley to submit his resignation.

This book is a must for those readers who would better understand our wartime relations with the Soviet Union.

THE ARMENIAN COMMUNITY. By Sarkis Atamian. 479 Pages. The Philosophical Library, Inc., New York. $4.75.

BY COL DANIEL C. POLLOCK, *USMC*

The history of Armenia from the time it emerged as a new state about 3,000 years ago through the present Armenian Soviet Socialist Republic is a bitter story of frustration and betrayal. The author discusses and analyzes the cultural development of the Armenians during the past century. He leaves little doubt that the Armenians have been one of the most severely persecuted groups.

The Armenian Church is described as being the oldest national Christian church. The author points out that many Armenians feel a sense of rejection and betrayal by fellow-Christian nations who failed to help them in their hour of need. As a result the individual Armenian has developed an attitude of disappointment, hostility, frustration, and, in many cases, a desire for revenge particularly against Europe. The Armenian community is split into political and ideological segments and into religious factions. It is these attitudes which provide for the seeming nonrational behavior in the present Armenian community in its social schisms and ideological sentiments.

Of specific interest to the military reader is the record of the tactics and operations of the Communists in acquiring and maintaining control of the Armenian Soviet Republic.

YOU'LL DIE IN SINGAPORE. By Charles McCormac. 192 Pages. E. P. Dutton & Co., Inc., New York. $3.50.

BY COL ALLAN G. PIXTON, *Arty*

The exciting and frequently tortuous experiences of Sergeant Charles McCormac of the Royal Air Force, from the time of his capture by the Japanese in Singapore in February 1942, until his flight to freedom from Java to Australia about 6 months later, are vividly told in this excellently written book.

The author escaped from a Japanese prison camp in Singapore along with 16 other prisoners. When he was picked up from a guerrilla hideout in Java, 5 months and 2,000 miles later, there were only 2 of the 17 left.

The book has little value as a historical account, but is fascinating reading and gives an insight into the primitive means of survival which can be endured in times of emergency.

CLOSE CONTACT. By Brigadier C. H. Dewhurst. 173 Pages. Houghton Mifflin Co., Boston, Mass. $4.00.

BY COL DALLAS A. PILLIOD, *Inf*

Close Contact is the story of Brigadier C. H. Dewhurst's experiences and observations as Chief of the British Mission to the Soviet Forces of Occupation in Eastern Germany from March 1951 to March 1953. In it the author describes his personal contacts—infuriating and funny—with the Soviet representatives and the Soviet System, and draws certain conclusions on the Soviet regime in general, and its effect upon the Communist individual in particular.

Brigadier Dewhurst appears well qualified to write on the Soviets. His background includes nearly 20 years of constant study of the Russian language, history, and evolution.

The book is more than just interesting reading; it is now vital to a sound background on the Soviets.

CUSTER'S LUCK. By Edgar I. Stewart. 522 Pages. University of Oklahoma Press, Norman, Okla. $5.95.

BY LT COL HENRY S. PARKER, *MC*

This recounting of the often-told tale of the Battle of the Little Big Horn is a thoroughly satisfying one. Its detail and documentation should appeal to the scholar, but the arrangement of the material is so skillfully contrived that it will hold the interest of many whose knowledge of the affair is limited to the famous painting of "Custer's Last Stand."

The first part of the book is devoted to a rather complete survey of the situation of the Indians from their displacement west of the Missouri River to the ultimate massing of their forces and the change of spirit which resulted in the annihilation of five companies of the 7th Cavalry.

The chapter on the impeachment of Secretary of War Belknap sheds much light on General Custer's character. The affair resulted from the disclosure that Belknap was engaged in "farming out" government appointments as post and Indian traders.

In recounting the story of the battle, the author seems to have no bias. He utilizes the testimony of many of the Indians involved which lends interest. He says that while many authors have questioned the veracity of this group, he feels that they are more reliable than many of the military witnesses. He presents seven conclusions, with reference to the conduct of the battle, which he thinks are justified. From the standpoint of individuals, Custer, Reno, and Benteen all are considered to have contributed to the unfortunate outcome of the engagement. The general reader will be disappointed, as he so frequently is, that there are not more maps supporting the text.

MAGIC AND SCHIZOPHRENIA. By Géza Róheim. 230 Pages. International Universities Press, Inc., New York. $4.50.

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